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EDITORIAL NOTICE

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

All matter intended for publication must be received at our office not later than Wednesday morning of each week, in order to secure insertion in the current issue.

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Contents of this Issue

Central Car House and Interurban Depots

The constant tendency in street railway practice has been to put the car house on various lines further away from the center of the city on account of the cost of real estate and the extension of lines. It will be interesting the next few years to note what effect the building of central depots adjacent to the main business portion of a city for the purpose of handling interurban freight and passenger traffic will have on the practice in regard to car houses. The removal of the car house further and further away from the center of the city has made it more and more difficult to supply quickly, cars for various emergencies. The erection of a building which would not only accommodate interurban freight and passenger traffic but also provide for storage of enough cars to provide for such emergencies as are likely to arise in the operation of any street railway might be feasible. To be sure, land near the business portion of any city is likely to be rather expensive for car storage purposes. At the same time it is sometimes possible to obtain control of a fairly large piece of ground near the business center, which for some reason or another is considerably below general values, and the purchase of enough land to provide for storage of a few cars would not in some cases involve greater investment than the purchase of simply enough for interurban depot and express and freight offices.

Street Car Lighting

The New York *Times* expresses its regret that "none of the electrical geniuses who have done so much good work in the perfecting of electrical apparatus have devised any practical means of putting a stop to the distressing blinking of incandescent lamps" in street cars as they cross switches or lose touch of overhead trolley and underground rail. It gives statistics on the subject:

"On one of the main lines of electrical surface cars two nights ago the lights were extinguished thirty-four times between City Hall and Harlem. The periods of such eclipse were brief, but on parts of the run they were extremely frequent—so frequent, indeed, that the alternations were of about equal length. Of course, people should not try to read newspapers in jolting street cars by electric light; but they will do it, with advantage to oculists and opticians, and if adequate lights are provided for their accommodation such lights should not be quenched so frequently."

A remedy for such things would lie, of course, in a small storage battery equipment, but this, in turn, involves many difficulties and objections. Combinations of batteries and live current are an old idea in street railway work, but up to the present time none of them, so far as we are aware, has been found applicable to street railway service in cities. There is, of course, room always for new inventions and improvements in electric railway work, and the suggestion is not amiss, but the gain from the adoption of the electric light is great enough to atone for much that might justify complaint. The enjoyment of its brightness and cheerfulness for fifty minutes may offset a total ten minutes of flicker in a journey of one hour.

Cuspidors and Clocks.

According to Alderman Harburger, of New York City, the large and growing cities of the West have cuspidors and clocks in their street cars. We do not quite gather from his statement whether this explains the growth and greatness, or whether the absence of such appliances militates against the right of Eastern communities to be considered centers of civilization. But it is easy to improve and catch up, and Mr. Harburger shows how to do it:

"Spitting is a necessity. It is a simple matter to have a trapdoor cut in the floor of the car with a spring attachment. If a man is compelled to expectorate he can press the button with his foot and can spit in a cuspidor beneath the level of the car floor. If the Board of Aldermen will adopt the plan for cuspidors I will amend my ordinance and not insist on placing clocks in all cars."

The spectacle that the imagination conjures up as one reads this and sees all the little trapdoors flipflapping to the gurgle and grunt of the passengers about to expectorate almost leads us to wish that such conveniences might long be limited to the great and grow-

ing cities of the West. But another alderman suggested putting directories in the cars, and yet another sensible man favors ice-water. We hope that when these new cars get fitted up a little room will be left for passengers.

"The Worst in the World."

The spleen and renown of some people carries them a long way in defamation of others, and when a mere corporation happens to be the subject of their attack no bounds are set to the malicious invective used. We note an instance of this in the remarks just made by Frank Moss, at the meeting of the Culture Club of New York City. The "cultures" affected by the club must be all kinds of deadly disease germs, if we are to judge by the poison emitted on this occasion. As to the street-car system in this city, Mr. Moss said: "We have the worst street-car system in the world. The Metropolitan owns this city. They transfer us or dump us off their cars as if we were bundles or baggage. They kill or maim people at their sweet will. No government official ever says anything about it—in fact, I don't think that under ordinary circumstances any official of the municipal government would dare to open his mouth."

As an example of unmitigated misrepresentation of men and facts, this will easily hold its own. Just what the animus back of it is we do not know; but if the company had time to run down pernicious libelers Mr. Moss might have an opportunity to reveal the basis of his prejudice. The sanity of his outpourings may be judged from the notion on his part that the company revels in killing and maiming people at its sweet will. When you consider that for every such case an impartial jury "soaks" the company anywhere from five to fifty thousand dollars, the gaiety of the revel can be inferred. Meantime we venture to inform Mr. Moss that in street railway circles, at least, and not merely those of this country, the Metropolitan Street Railway Company is regarded, not as the worst, but as the best of its kind, and that its president and other officials are confessedly picked men in every respect. Aside from simple ability, if there is a man of kindlier heart and disposition than Mr. Vreeland, we have not yet met him. Moreover, while he can not govern the every act of every employee, it is certain that his influence permeates the ranks. Mr. Moss forgets that in abusing the company he is blackguarding also every one of its men.

A Hard Job

The newspapers make note of the suicide of a young man in Brooklyn after one day of work as a street car conductor. He had previously held an indoor position, a small clerkship, in which he had doubtless very little to do with the public. At any rate, the hardships and annoyances of the new job were such that after one round he threw it up and was discouraged from all earthly work thereafter. The case is a pitiful one, and emphasizes the fact that the conductor of a street car has a good deal to put up with. This is true, of course, of well-nigh every position in life; and, on the whole, we believe that street railway men are very rarely driven to suicide by the unpleasant experiences of their daily round of toil. They are not generally of the brooding, introspective mental type that indulges in psychological agony. Public sympathy, as a general thing, when expressed at all, is given to the motorman, especially if in such weather as this he does not enjoy the seclusion of a vestibule; but, as a matter of fact, the conductor has as much to endure from the passengers on the car as the motorman has from those who dodge in front of it. The surmise is not altogether wild that if the young fellow who killed himself had had a few kind words from his fares he would still be a conductor. A conductor treated with politeness would hardly know what to make of it.

In the Rush Hours

Reports were current in the New York papers last week that the trainmen on the Manhattan Elevated were under orders to pack the passengers a bit closer. The real truth is that the following orders were issued by S. D. Smith, superintendent of transportation.

"Your attention has been called several times recently to the fact that you must at all times in case of standing passengers in rush hours, request passengers as they board the train to "step lively" and move up in the cars toward the center. I am in receipt of from fifty to one hundred reports of derelictions of this kind of duty every day. Dismissals from the service will certainly follow any further failure to comply with orders and instructions relative to these matters. I am tired of receiving so many reports of derelictions of duty, and you should thoroughly understand by this time that you must obey orders if you desire to be retained in the service."

The conductors and guards have certainly a hard time in getting passengers to "move up toward the center," a reluctance that has no little selfishness in it, because it occurs most at a time when the trains can be run no closer and when crowded car platforms and doorways prevent those who wait at the stations from geting on. It is a debatable question whether a closed car with a center entrance as well as end doors can be filled and cleared as quickly as one with end platforms only. There is no question, however, but that all difficulty in quick unloading will be avoided in the new open electric cars, such as those already adopted for the Second Avenue Elevated. In these cars all the seats are crosswise and the cars clear at the side from each bench or compartment simultaneously and not from the ends merely. This should help the passengers and trainmen alike, to say nothing of yielding a gain in train speed. But the indisposition of passengers in the old type of car to "move up" throws a lot of extra work and worry on the conductors, and would soon spoil the sweetest temper.

Elevated Railways.

For a long time the New York elevated railway was the only one of its kind in existence, and the "road on stilts" was pictured in all guide books of New York, and referred to in all variety of terms by authors of books on travel which embraced New York City. Some of these writers commended the plan as affording the quickest means of transportation within cities, and by far the pleasantest for the traveler, who was carried in pure air and in sunlight, instead of through a murky and smoky tunnel. Foreign observers, as a rule, however, condemned the structure as an abomination which would not be permitted in any of the foreign capitals. To be sure, some of the cities abroad had steam railways above the surface of the streets, but these roads were nearly always short terminals of some trunk line, built on stone viaducts, through blocks and not over streets, or else were belt railways, also on viaducts, making a circuit of the city through the outskirts and not entering the main business districts.

While it might perhaps be difficult to claim that an elevated structure is any addition to the æsthetic beauty of the city, the popularity and convenience of elevated roads in a large city, where rapid transportation between its different parts is a necessity, has been amply demonstrated by the New York elevated railways, as well as those of Brooklyn and Chicago, and it is safe to say that in all of these cities business conditions have so shaped themselves to the operation of these roads that a hindrance to their service would seriously cripple commercial development. The advent of electricity, while it may not improve the appearance of the roads, certainly has removed certain of the drawbacks, so that it is not surprising that elevated railways should now be considered essential to the transportation systems of many large cities in this country and abroad. Not only have the New York and Chicago systems been extended, but Boston has now its own elevated system, and Pittsburg and Philadelphia are seriously contemplating the construction of roads of this kind, while the elevated system of Berlin, Germany, has just been put in operation. In London, the function of the elevated road has been supplied by the deep underground road, owing to the local reason that the subsoil of that city is particularly suitable for underground construction. It cuts almost like cheese, and with the Greathead system of tunneling tubes can be rapidly carved out of the underlying clay and chalk at a cost vastly less than they could be built in New York or nearly any other city, owing to the underlying rock.

There is no doubt that in the elevated road lies the only practical solution of the transportation problem for nearly all of the large cities of the future. By this we do not mean that such roads will usurp the function of the surface roads, which will always form an essential and most important factor in city transportation; but the inevitable result of the growth of large communities is that they will sooner or later reach a point where the width of the streets will not be sufficient to accommodate on one plane all of the agents required for transportation and traffic, and relief must be had by additional tracks, either above or below the surface. As the former will surely prove the cheapest and most practical, the elevated road will be the type usually built.

This subject is of more immediate importance to many railway companies than some may believe, and it is for this reason that we wish to emphasize the necessity of railway companies in cities where there are no elevated railways looking forward to the time when such a system must inevitably be built. In many cities of this kind now surface cars have been added to the streets in such numbers that the running time through the crowded business districts is but little better than in the old horse-car days. Such a condition, where it exists, demonstrates but one thing plainly, and that is that the construction of an elevated structure cannot long be delayed, and it behooves the railway company, even in advance of the coming of such a time, to obtain the rights to build such a road, rather than to have it built by some outside corporation. The elevated road from both a mechanical and financial standpoint can be operated much more successfully by and in conjunction with the surface system than where each is owned by an independent company, so that it is a step in the interests of the city, as well as for its own welfare, where the surface company insures the construction of an elevated road by itself and by no one else.

The New York Merger

The financial statement in regard to the new organization of the control of the Metropolitan Street Railway Company of New York, which has been awaited with so much interest during the last two weeks, when it was announced unofficially that negotiations were pending to carry through an arrangement of this kind, was made public last week. The full details of the plan, as contained in a circular issued to the stockholders, and as further explained in a statement made by Mr. Vreeland, are published on another page elsewhere in this issue. Briefly the plan is similar to that which has proved popular elsewhere, of leasing the company to an operating company, which, in this case, is called the Interurban Street Railway Company, which will guarantee a fixed dividend, in this case 7 per cent, on the capital stock of the lessor, and to have the stock of the lessee company owned by a large securities company, which will thus control the property. The capital stock of the securities company is to be $30,000,000, and the stockholders of the Metropolitan Street Railway Company will have the right to subscribe to this stock at par, to the extent of 45 per cent of their holdings; in other words, to a total of $23,400,000. An incidental feature of the plan is the issuing of a refunding mortgage of $65,000,000 to retire the present bonds of the Metropolitan Street Railway Company, which bear a high rate of interest.

The names of the directors of the new securities company, which are given elsewhere, are notable from the fact that none of the gentlemen so mentioned has been identified previously with the Metropolitan Street Railway Company. The interests they represent, however, are large and powerful and include the Pennsylvania Railroad, the largest life insurance companies in the country, and prominent trust companies and European capitalists. This insures success in raising the required capital and completing the plan as laid down in the statements published. The fact that the same management will continue to operate the property is a guarantee of a progressive and economical service.

As pointed out in Mr. Vreeland's remarks, there is no doubt that the proposed plan will not only greatly increase the efficiency of the street railway service in New York by giving the company plenty of capital to make needed improvements in the way of introduction of improved motive power on its present horse-car lines, but will provide a reserve capital capacity and flexibility, if the terms can be so used, by which any improvements which are required can be made from time to time, and other transportation systems within the city can be unified with the Metropolitan system if such a step should prove desirable later, and as has been done in Westchester County by the addition of the lines owned by the Interurban Street Railway Company. This latter company owns extensive franchises north of the city, which are now of great value and promise to be of much greater importance, as the future growth of Greater New York will undoubtedly be largely in that direction.

The proposition, from the standpoint of the present Metropolitan stockholder, as well as that of the new company, seems to be a most favorable one. A large increase in earnings will undoubtedly result from the electrical equipment of the existing Metropolitan horse lines. The Metropolitan company is now operating more cars by horses than all the rest of the companies in the country put together, and a resulting reduction in operating expenses of 6 cents or more per car mile added to the increased receipts which are always produced by better motive power should make an enormous difference in the net receipts from operation of the company. A statement of the lines yet to be equipped electrically is given below:

NON-ELECTRIC LINES OF METROPOLITAN STREET RAILWAY CO. AND ALLIED COMPANIES FOR YEAR ENDING JUNE 30, 1901

	Gross	Net	Miles of Track	Car Miles
Met. St. Ry. Co.....	$1,893,068	$292,374	44 05	8,337,355
Dry Dock. E. B. & B..	588,540	188,468	20.43	2,025.148
Fulton St.....	45,922	15,483	1.89	106,787
34th St (1).....	397,949	157,904	5.60	1,129,718
28th & 29th St.....	177,370	60,607	7.61	535,701
42d, Man. & St. N (2).	701,277	228,642	30.79	3,044,959
Total.	$3,804,126	$943,478	110.37	15,179,668

(1) Operated by storage battery, but to be equipped with conduit.
(2) 19.35 miles operated by electricity, beginning Jan. 23, 1901.

The additional earning capacity which will result from the electrical equipment of these lines is secured, so far as the present Metropolitan stockholders are concerned, without any increase by capital charges, so that the payment of the 7 per cent guaranteed on this stock is assured, making it a desirable investment security. The value of the right to subscribe to the new stock at par is quoted (Feb. 19) on the curb at about $11 per share, and while it is yet far too early to determine its exact earning power, we believe that eventually it will be a very valuable asset. The Metropolitan system as its exists at present is able, and more than able, to pay all existing fixed charges on the property and meet its own guaranteed dividend. The profits which will go to the new stock will include not only the increase in the Metropolitan earnings which will result from the capital expended by the new company in building new roads and equipping present lines, but also the surplus earnings of the existing properties, which in the future must be far greater than at present, as a large proportion of the Metropolitan trackage in the Bronx is now comparatively unproductive. This can be seen from the following table, which gives the mileage and gross receipts of the properties belonging to the new company below and above the Harlem River as they were reported to the Railroad Commissioners for the year ending June 30, 1901:

LINES ABOVE AND BELOW HARLEM RIVER FOR YEAR ENDING JUNE 30, 1901

	Gross	Miles of Track	Gross per Mile of Track
Met. St. Ry. Co. and allied lines below Harlem River.....	$19,287,550	292	$66,053
Met. St. Ry. Co. above Harlem River (including properties owned by Interurb. St. Ry. Co.)	1,417,290	156	9,085

With the construction of the new rapid transit line, however, the Bronx and Westchester will certainly have an enormous growth, and while the gross receipts per mile of track above the Harlem may not for a long time, if ever, equal those below the river, this part of the company's system will, in the not very distant future, possess a greatly increased earning power.

The Salford Corporation Tramways

A description of the new tramway system just put in operation in Salford, England, near the large manufacturing city of Manchester, was published in the Feb. 1 issue of the STREET RAILWAY JOURNAL. Since the publication of that article some further particulars of this interesting installation have been received from our London correspondent and are presented herewith.

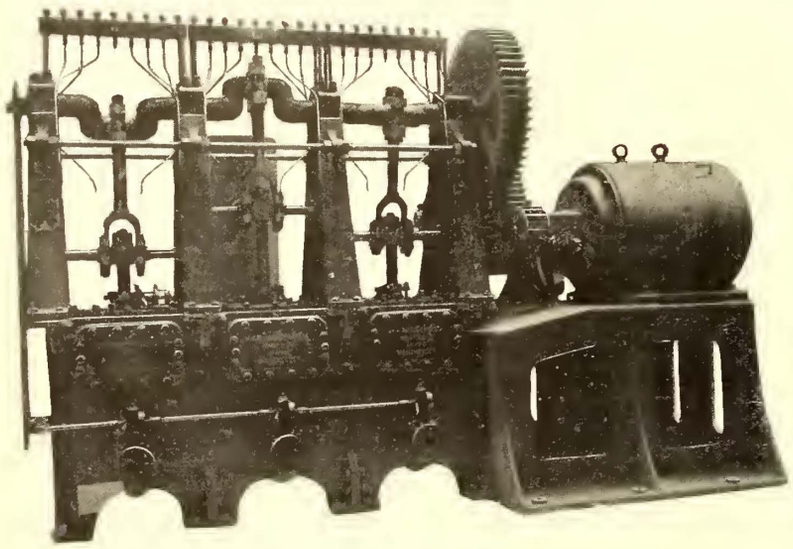
Over the engines and generators there is a traveling crane, supplied by James Carrick & Sons, Ltd., of Edinburgh. This has a span of 43 ft., and is capable of lifting 30 tons, with a deflection of the girders not exceeding ¼ in. There are six steel ropes of 2¾-in. circumference, wound on a machine-grooved drum. The motions for lifting, cross traversing and longitudinal traveling are all worked from the platform on crane.

The steam pipes are of mild steel with welded flanges, the main steam ring being 14 ins. in diameter. The main exhaust pipe is 18 ins. in diameter, of cast-iron with 15-in. branches to each engine. In the main steam ring are three expansion bends of copper, each bend consisting of two 10-in. copper pipes with cast-steel boxes. The valves, steam and exhaust are Garvie's patent, manufactured by W. H. Bailey & Company, Ltd., and are of the parallel-face type, with renewable expansion seats.

The air pumps and condensers are of the Edwards type, and were also manufactured by W. H. Bailey & Company, Ltd., of Salford. They are eight in number, one for each engine. They are of the three-throw type, each barrel being 21 ins. in diameter, 12-in. stroke, running at 100 r. p. m., and each pump is capable of dealing with 18,750 lbs. of steam per hour. These pumps draw condensed water through a 20-in. suction pipe from the canal, and discharge into a 40-in. pipe, with six outlets to the canal.

The chief feature of the Edwards patent air pump is, there are no bucket valves, the absence of which decreases the liability of a breakdown and the number of parts requiring attention; it also allows of very little clearance between bucket and discharge float. The pump is fitted with Edwards patent air valves, which enable air to be drawn in at the proper point of stroke. The pumps are fixed on a level above that of the discharge pipe, which is advantageous, as they can be run with the covers for access to the valves removed, so that the action can be observed.

Each pump is fitted with a Bailey's patent magazine dial lubricator, which provides an independently adjustable feed for each part of the pump.



EDWARDS AIR PUMP

The motor and second-motion shaft are carried on an extension, which is bolted to the pump bed-plate. Each air pump is driven through double reduction gear by 50 brake-hp electric motors constructed by P. R. Jackson & Company, Ltd., Salford. Each air pump has a 15-in. automatic exhaust valve.

There are two pump-rooms, each containing three sets of feed-water pumps and motors. Each pump is capable of delivering 4000 gals. of water per hour, against 160 lbs. steam pressure. The pumps, which were manufactured by Bertram Thomas, of Manchester, are three-plunger type, and the motors are of our own make, developing each 20 bhp at a speed of 480 r. p. m., this speed being capable of being increased to 600 r. p. m. by means of a shunt resistance. The power is transmitted from the pumps to the motors through worm gearing, with a special ball thrust, the worm gearing and thrust running in an oil bath in an iron case.

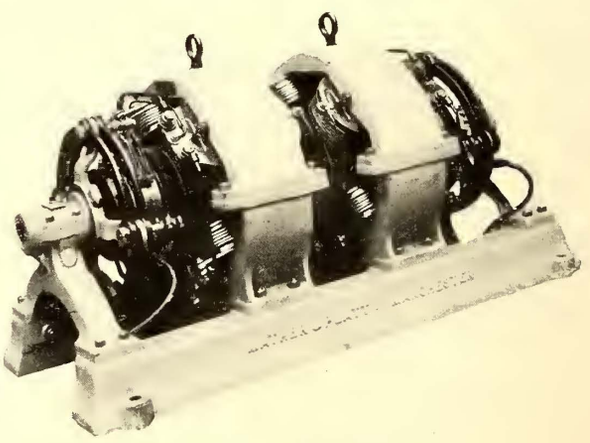
The motors can be run either on 500 or 250 volts, as is required, according to the amount of work to be done. By an arrangement of valves, the water can be pumped either direct to the boilers or through the economizer.

Two main switchboards have been provided, one controlling the lighting system and the other the traction. These switchboards, together with an auxiliary board controlling the motors and lighting circuits in the works, have been erected in a switch-room on the first floor at the north end of the engine-room.

DOUBLE BRACKET POLE

In the center of the switch-room eight main throw-over switches have been erected on an iron frame, to enable any dynamo to be connected either to the lighting or traction switchboards. These throw-over switches are designed for 1600 amps., and are mounted on enameled slate slabs bolted to the iron framework.

The lighting switchboard is built up of hard black marble slabs mounted on a strong iron frame, all connections to switchgear, etc., being so arranged that they are accessible from the front of the board, and the whole of the apparatus and gear is removable without the necessity of access to the back. The board is divided into a center portion and two wings, the center portion carrying the dynamo returns and midwire connections, and each wing is divided into four balancer panels, four dynamo panels and fourteen feeder panels. The panels are 2 ins. thick, and about 9 ins. wide, and between each line of switchgear below the bus-bars removable vertical partitions of black marble are fixed, projecting out beyond the gear.



BALANCING TRANSFORMER

Across the board above the switchgear run three horizontal bus-bars, and each machine or feeder panel is provided with a vertical bar, which may be connected to either of these by means of a plug. Above the bus-bars are fixed two lines of edgewise instruments, the ammeters below and the voltmeters above them.

Each dynamo panel is provided with a reverse-current automatic cut-out, plug-bar and ammeter, and a shunt regulating and breakswitch is fixed immediately below on a projecting part of the board, these switches being interlocked with the autos above them. The balancer panels are eight in number, four being pro-

vided with main switch, cut-out, plug-bar, ammeter and field regulator, and the other four with cut-out, plug-bar, ammeter, field regulator and special starting switch.

Each feeder panel is provided with a main switch, fusible cut-out, plug-bar, ammeter and voltmeter. Each feeder panel is arranged for a current of from 600 to 1200 amps.

The center panels are fitted with the eight return plug-bars and fuses for dynamos, five midwire ammeters, midwire-bar, recording ammeter and cut-out for connection between midwire-bar and earth, eight voltmeter switches, one double-pole, two-way switch for connecting the field exciting circuit to the lighting bus-bars or to the battery sub-station, and an exciting circuit voltmeter. Above the center panel is an eight-day clock.

The instruments used were manufactured by Evershed & Vignoles, and are of the moving-coil, edgewise pattern, mounted on the framework of the switchboard.

The reverse-current automatic switches on the dynamo panels are of the Andrews type.

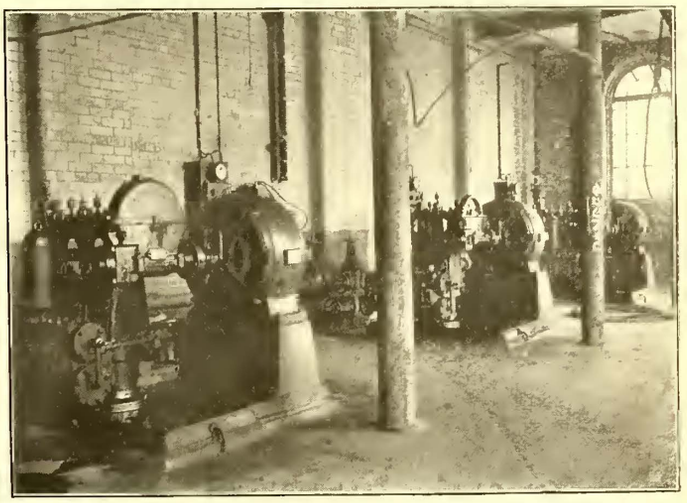
The main throw-over switches in center of switch-room previously mentioned are so connected that the dynamos when running on the lighting switchboard are running as simple shunt machines, and when thrown over on to the traction switchboard as compound machines.

The traction board is arranged for the control of eight dynamos and eighteen feeders, and is in three portions, the center panel carrying the Board of Trade instruments and the station voltmeter. On the right are eight dynamo panels, and on the left are nine feeder panels, each panel controlling two feeders. The board is built up of 2-in. black marble panels mounted in a steel frame, and stands sufficiently far from the wall to allow of easy access to the connections at the back. The center panel carries four rail potential recording voltmeters with plugs and sockets for connection to the rail pilots, four recording ammeters for the four insulated return feeders, a recording bus-bar volmeter, a leakage ammeter for indicating the insulation of the feeders, with plug and sockets, and a voltmeter for the exciting circuit. Over the center panel are mounted two illuminated dial dynamo voltmeters and two bus-bar voltmeters of similar design.

Each dynamo panel carries an ammeter, circuit breakers, treble-pole main switch operated by two handles (one taking the positive switch and the other the negative and equalizer switches) and a field regulating and break-switch.

Each feeder panel carries two ammeters, circuit breakers, main switches, wattmeters and lightning arresters. The capacity of the feeder switch-gear varies from 300 amps. on some feeders to 750 amps. on others. The circuit breakers used on this board are of the I. T. E. pattern. The main switches are of the chopper pattern, with multiple contacts. The field regulating switches have fifty contacts and a shunt-break attachment, and are interlocked with the main switches. The lightning arresters are of the Garton-Daniels pattern. The recording instruments are by Elliott Brothers. The wattmeters are of the Thomson switchboard pattern. The dynamo and bar voltmeters and the dynamo ammeters are Evershed & Vignoles sector pattern, moving-coil instruments. The feeder ammeters are edgewise instruments, by the same makers.

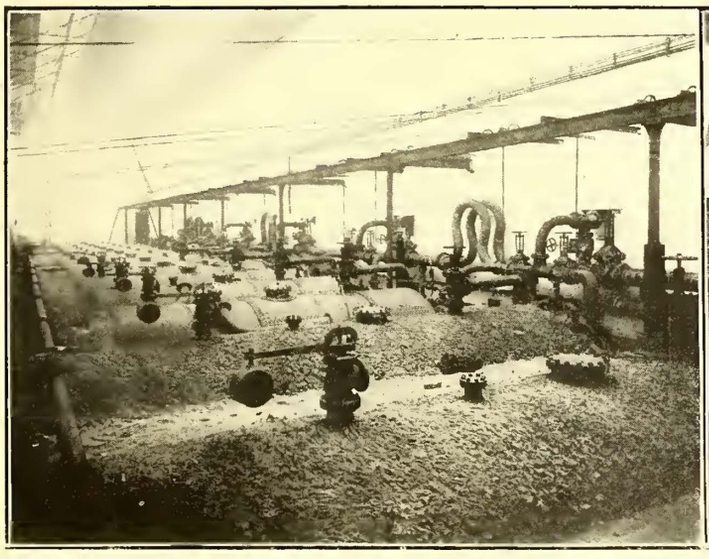
An auxiliary switchboard is also erected in the switch-room, controlling the motors, etc., in the electricity works. This board is of enameled slate in an iron frame, and carries switchgear and instruments for controlling four three-wire circuits and one two-wire circuit. Each three-wire circuit is provided with two circuit breakers, two ammeters and three single-pole switches. The two-wire circuit has one circuit breaker and ammeter and two single-pole switches. Two voltmeters are also on this board,



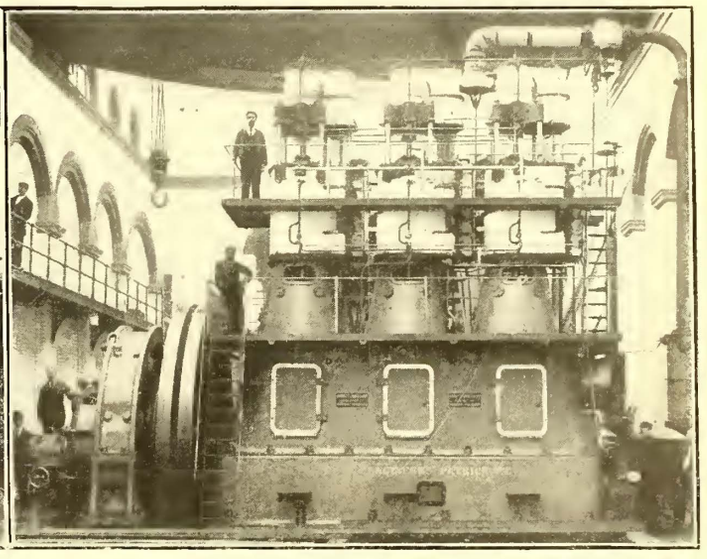
PUMP ROOM, SALFORD

reading the voltage between midwire and either side of the three-wire system. The switchgear and instruments are similar to those on the other boards.

There are eighteen traction feeder cables and four insulated return feeders taken from the works to the section boxes on tramway system. Arc lamps of the Brockie-Pell make have been erected on the tramway poles on the main road to Pendleton; these are connected nine in series across the outers of the lighting mains. They are controlled from switchboxes along the route.



VIEW ABOVE BOILERS



GENERATING UNIT, SALFORD

The whole of the cables have been manufactured by W. T. Glover & Company, Ltd., of Manchester, who have also supplied the conduits, troughs, arc lamps, switch-pillars, etc., and all work in connection with them, such as laying, building manholes, jointing and connecting the cable and the erecting and fixing of the arc lamps, has been carried out by this firm. The feeders are drawn into three-way, 3-in. glazed stoneware conduits, and the distributors are laid in earthenware troughs, filled in solid with a bituminous compound. The cables run from the generating station for a distance of about 150 yds. on cast-iron brackets in a subway to a manhole, where they branch off in the conduits to the various routes. On the main route sixty way-ducts are laid, buried in concrete, which will give some idea of the difficulties that had to be overcome in the way of bridges over canals and railways, gas and water mains, etc., which in some cases necessitated excavating to a depth of from 12 ft. to 14 ft.

The total amount of the three-way conduits laid amounts to,

approximately, 104,500 yards, and that of the three-way troughing, to about 33,100 yds. In cases where the distributor runs over the same route as the feeder cables it is laid on the top of the conduits, diverging round the manholes. These manholes are on an average 80 yds. apart, and vary in size from 10 ft. square to 2 ft. square. Distributed over the system are a dozen feeder pillars—some connecting six distributors each—into which the feeder cables are run.

The most important item, the cables, are in all cases paper, insulated, impregnated with "diatrine," and lead covered, and, in the case of the feeders and distributors, single-core, varying in sectional area from .125 sq. in. to 1.2 sq. in., the latter being over 2 ins. in diameter; while the telephone, pilot, arc and incandescent cables vary from twin to four-core. The number of yards of cable of all kinds make no less than 160 miles, which, curiously enough, works out at £1,000 per mile, the contract price being £160,000, the largest mains tender ever accepted. A. E. Gibbs has acted as resident engineer for the Messrs. Glovers throughout the contract.

The cars (the first order for which consisted of one hundred) have been constructed by George F. Milnes & Company, Ltd., at their Birkenhead Works, and have a seating capacity for fifty-five passengers, viz., twenty inside and thirty-five outside. They are of a type very largely in use in Great Britain, and are fitted with Liverpool reversed pattern of staircase. The canopies are extended well over the platforms to form a protection for the motormen. The external appearance is novel, as the top rail is surrounded by ornamental painted scroll work, and fixed at each end are destination drums of an improved type. The internal finish is generally in oak and ash, but the ceilings are of bird's-eye maple veneer, tastefully decorated in silver and blue, and the seats of perforated birch, covered with carpets, with the Corporation coat-of-arms woven in. The latter, together with the crimson curtains, give an exceptionally warm and comfortable appearance inside, and the car in every respect is thoroughly up to date.

The Doylestown and Eastern Street Railway

The construction of the Doylestown & Eastern Street Railway, which will extend from the Pennsylvania & Reading Railway depot in Doylestown, Pa., to "The Circle," Easton, Pa., a distance of 31 miles, was begun in July, 1901. Up to this time 10 miles of track have been laid, two brick sub-stations have been built, and a car house has been constructed. The cars have been delivered. It is a single-track road, built on private right of way for its entire distance, except in towns and for a distance of 6 miles on the turnpike near Doylestown. The road is being laid with 60-lb. T and 70-lb. girder rails, and stone ballast is used. The power house for the new road is now under construction at Raubsville, and will be equipped with two Stanley 400-kwac generators, two direct-connected cross-compound engines, built by the Pennsylvania Iron Works, three water-tube boilers and other apparatus. Power will be generated at 15,000 volts. The sub-stations are equidistant from the generating station. The plan is to operate twelve 40-ft. cross-seat cars, equipped with Lorain motors, Gold heaters, and Merritt air-brakes. The Easton section of the road is now under construction, and is expected to be ready for operation by Aug. 1. The entire road, it is expected, will be ready for operation by Dec. 1. The road will make direct connections at Doylestown with the Doylestown & Willow Grove Street Railway, and at Easton with the lines of the Lehigh Valley Traction Company, thus giving Easton and the towns in the valley direct connection with Philadelphia. The officers of the company are: Isaac R. Rosenberger, of Colmar, Pa., president; H. J. Shoemaker, of Doylestown, secretary and treasurer; H. M. Herbert & Company, of Bound Brook, N. J., contractors; H. M. Herbert, constructing engineer.

The Goldsmith Alumino-Thermic Method of Rail Welding

In an exhaustive article on the Goldschmidt method of rail-welding in the *Deutsche Strassen und Kleinbahn-Zeitung* Mr. K. Beyer, chief engineer of the Allgemeine Thermit Gesellschaft, of Essen (Ruhr), presents some interesting data in regard to the cast-welding by that process, which have been made in Germany during the past two years. The system has been described and referred to in the columns of the STREET RAILWAY JOURNAL from time to time, and on account of the results obtained with it in Germany the following data must certainly be of interest.

Mr. Beyer first points out the great importance in street railroading of good and stable track construction, having reference in particular to an approximately continuous rail. Proper construction in this direction, the author claims, requires a combination of theoretical and practical knowledge, a thorough understanding of the manner in which the load is applied to the rail and the effect of temperature on the rail. The first experiments with the Goldschimdt alumino-thermic rail-joints were made on a small scale at Essen, Germany. They were carried out under difficulties, the joints being welded at night on a track which was in constant use during the daytime. The results, while not very gratifying, pointed the way to improved methods. Soon after, roads in the following cities experimented with the joints: Berlin, Dresden, Hamburg, Braunschweig, Hanover, Kopenhagen, Aachen and Plauen. A number of rail-joints in these cities were cast-welded between May and November, 1900. The results varied considerably. The first experiments at Braunschweig were made with Phœnix 14a rail sections, partly laid in pavement and partly in asphalt on concrete. Seventy-nine joints were made, and on July 12, 1900, they were all intact. On Oct. 25 four joints had broken in the asphalt and three in the block pavement.

In June, 1900, sixty-nine joints were made in Hanover. The line was short, the rail section was 14a and the track was laid in asphalt on a concrete bed. The track was six years old, and two months after the joints had been made four of them had broken. The author continues giving the detailed experiences in each of the cities mentioned above, tabulating the same as follows:

No.	Name of Street Railway Co.	Rail Section	Date when Joint was Made	No. of Welded Joints.	No. of Broken Joints	Per Cent of Broken Joints	Old or New Rails	Day or Night W'k	Roadbed of Track	Weather Condltions	Expansion Gaps
1	Braunschweig Co. I	14a	May, 1900	79	9	11.4	New	Day	Asphalt on concrete Basalt pavement	Cool and rainy	Every 60 m.
2	Hanover "	14a	June, 1900	69	4	5.8	Old	"	Asphalt on concrete	Hot and rainy	"
3	Hamburg "	17c	July & Aug '00	209	10	4.78	"	Night	Pavement on sand	" "	None
4	Dresden "	14a	Aug. 1900	160	4	2.5	New	Day	Pavement on sand	" "	Every 60 m.
5	Grosse Berliner "	17a	Sept. 1900	224	5	2.2	"	"	Asphalt on concrete	" "	None
6	Braunschweig " II	14a	Oct. 1900	144	13	9.02	Old	Night	Macadam	----------	Every 60 m
7	Plauen (Sax.) "	8a	"	96	--	----	New	Day	"	----------	"
8	Kopenhagen "	25b	Nov. 1900	197	10	5.07	"	"	"	Cool and rainy	--------
9	Aachen "	25b	"	16	--	----	Old	Night	"	----------	None
	Total	----	----------	1194	55	----	--------	--------	----------	----------	--------

The above table shows an average breakage of only 4.6 per cent of all joints; 4.3 per cent broke on new rails and 4.9 per cent on old rails. This result cannot be termed unsatisfactory, in view of the fact that ofttimes the work of making the joints was performed under severe and most unfavorable conditions. The table also shows that the percentage of breaks became less as time went on, except in cases 6 and 8, which were affected by unusually unfavorable conditions. It should be stated that in nearly all cases the breaks occurred soon after the joints were made.

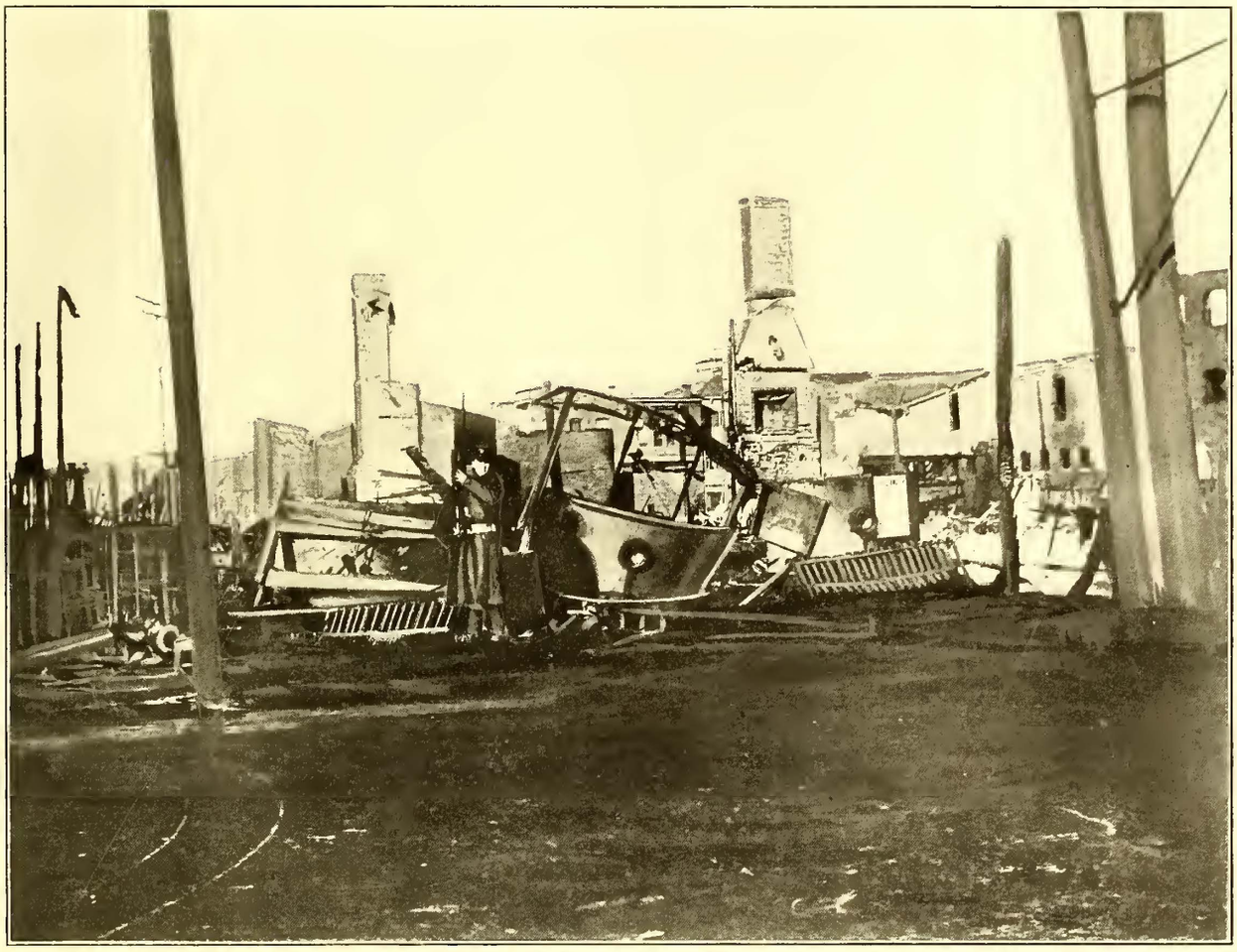
The table also shows that the use or omission of expansion gaps on well-welded rails has no particular effect, one way or the other, as long as the railbed is good and solid. It is not immaterial, however, in what kind of weather the joint is made, which is not to be wondered at, as weather affects all building operations.

In general, the following conclusions may be reached: That wherever new tracks are being laid the alumino-thermic joints are of great value if they are carefully made and are also used on the remainder of the track which may have been in use up to that time. Of late, improvements have been made in the method of making the joint, so that the layer which is formed during cooling consists of pure, soft iron, which is welded together with the foot of the rail. Furthermore, the rails to be welded together are pressed toward each other; and the weld is made independent of the exact section of the rail at the welding points.

All broken joints referred to above have been rewelded, and this new automatic method seems to have given very good satisfaction.

Fire at Paterson.

A disastrous fire, which occurred early in the morning of Feb. 9, destroyed a large portion of the business district of Paterson, N. J., including several churches, bank buildings, about 500 dwellings, and the car house of the Jersey City, Hoboken & Paterson Street Railway Company. In the various accounts of the fire it has been stated that the conflagration originated in the car house of the railway company, but President David Young, of the company, doubts this, and after carefully investigating the matter, issued the following statement: "From the investigations I have made I understand that the fire did not start in the car sheds. In the first place, there is no wiring of any kind in the sheds, and no cars are run into the sheds with the fires going. The fires are always dumped before the cars are run into the sheds. Besides, the place where the fire was first seen in the car sheds was occupied by cars that have been there for several weeks awaiting repairs. The attention of our night despatcher was called to the blaze first, and it came at that time from a building adjoining the car sheds."



THE CAR HOUSE AFTER THE FIRE

The rapidity with which the fire spread is well known. The employees of the company worked valiantly in an effort to save the company's property, and succeeded in saving part of the rolling stock. Seven double-truck cars, two sweepers and a quantity of feed and trolley wire were destroyed, however. The accompanying engraving shows a view of the car house after the fire, with the militia on duty.

The Everett-Moore Situation

At a joint meeting, held Thursday, Feb. 13, between the directors of the Cleveland Electric Railway Company, the bankers' committee in charge of Everett-Moore affairs and representatives of the Elkins-Widener syndicate, of Philadelphia, to consider the proposition made by the latter for the lease of the Cleveland Electric Railway, the bankers' committee in charge of the syndicate's property, declined to give its sanction for the lease of the property under the terms outlined. It is understood that the proposition was to pay the stockholders of the Cleveland Electric Railway Company 4 per cent on the stock for the first year, and from 5 to 5½ per cent thereafter. It is understood that a majority of the stockholders were in favor of accepting the proposition, but that the bankers' committee expressed itself as unwilling to consent to any proposition which did not contemplate the outright sale of the property.

The syndicate will probably dispose of the Canton-Massillon Railway, which was purchased some time ago, and the Akron-Canton Railway, which is held under option, and which was to have been turned over to it when completed. The first-mentioned property includes the city lines of Canton and Massillon, an interurban line between the two towns, and a line from Massillon to Navarre. It was purchased outright from W. A. Lynch, C. A. Gates and others. The Akron-Canton Railway is being built by L. E. Myers & Company, of Chicago, and was owned by Tucker, Anthony & Company, of Boston. It is understood that the Everett-Moore syndicate paid $50,000 on the purchase price, and the general impression was that the original deal contemplated the extension of the line from Canton to Newark, and the ultimate consolidation of roads making a through line to Cincinnati. The embarrassment of the syndicate makes such a scheme impossible, and now Tucker, Anthony & Company and L. E. Myers & Company have submitted a proposition to reclaim the Akron-Canton line and purchase the Canton-Massillon Railway. The bankers' committee in charge of Everett-Moore affairs now has this proposition under consideration.

The bankers' committee has passed favorably upon the collateral trust plan for the solution of the difficulties of the Federal Telephone Company, indicating that the telephone properties are to be continued practically intact, unless more flattering propositions are made.

It was stated on good authority Monday that a new bid for the control of the Cleveland Electric Railway will be submitted by the Elkins-Widener syndicate, perhaps within the next week. The representatives of the Philadelphia syndicate who have been in Cleveland returned to headquarters Sunday, and it is stated that a meeting would be held in Philadelphia early in the week to decide on a new proposition. The expectation is that the syndicate will stick to its efforts to lease the Cleveland property. They are expected, however, to insert in the proposition several clauses more suited to the ideas of the bankers' committee, as expressed at the meeting held last week when the original proposition was turned down.

CORRESPONDENCE

The Cause of Double Flanges

PITTSBURGH, Feb. 18, 1902.
KEYSTONE CAR WHEEL COMPANY.

EDITORS STREET RAILWAY JOURNAL:

I notice in your issue of the 15th inst. an article concerning double flanges and a desire to ascertain the cause. I would suggest an investigation as to whether the gearing of the motor is located in the center of the axle. If to the right or to the left of the center it would appear that there would be a tendency to crowd the wheels to the right or to the left of the track and a corresponding irregular wear on the wheels. There will certainly be more leverage on one side than the other if the power is not applied in the center.

Why won't this explain the difficulty referred to in your article?

CHAS. V. SLOCUM, President.

Grinding Out Flat Spots

THE WHEEL TRUING BRAKE-SHOE COMPANY
DETROIT, Mich., Feb. 11, 1902.

EDITORS STREET RAILWAY JOURNAL:

The writer was much interested in your editorial on "Replacing Wheels," which appeared in your issue of Feb. 8, and also impressed with the figures quoted as indicating the cost to the railroads of the country through replacing wheels which for any cause are not in condition to be used. This being the time of year when wheels are easily skidded, the writer fancies that the resulting flats, perhaps, necessitate the taking out of more wheels than any other one cause.

The writer has made a close and careful study of this subject, and is satisfied that the sum of $3.50 given as the average cost of replacing a pair of wheels is none too low, and to this must be added loss of the use of the car, which will, of course, vary, according to circumstances. But there is another item which is not mentioned, and which is, in the writer's opinion, quite an important one: The cost of removing a wheel being considerable, and the inconvenience sometimes very great, the railroad man will naturally run his car for some time after the wheel is flattened, thereby allowing the flat spot to grow in size and depth, which means that when the wheel is finally removed for the purpose of truing (grinding) so much metal has to be cut away in order to remove the flat that the life of the wheel is greatly shortened. If, on the other hand, the flat is taken early only a small amount of chill has to be ground off in the process of truing, and greater mileage obtained as a consequence. The average depth of the chill on the tread of a wheel is said to be about five-eighths of an inch, and we will suppose 50,000 miles to be the average life of a wheel that does not have to be ground. That would be 10,000 miles for each ⅛ in. of chill; consequently for each ⅛ in. removed in the process of grinding one-fifth of the life of the wheel is destroyed. If, therefore, the flat is removed early, only a small amount of metal is removed, and the life of the wheel prolonged. But unfortunately the expense and inconvenience of "changing wheels" is so great that, as said before, the wheel is kept in service until the flat will be no longer ignored. If the wheels could be trued up, we will say, for about 30 or 40 cents per pair, and without taking the car out of service, why would it not pay to do it before the flat has grown large and deep?

Another cause necessitating the "changing of wheels" is the chipped flange, caused by that part of the wheel growing too long. If this trouble could also be remedied while the car is in service would it not be good business to do it? This is what a wheel truing brake-shoe does as it operates upon tread and flange alike. It thus maintains a proper relation between these parts of the wheel, thus preventing the long flange, which frequent grinding by other methods will produce. And in case the flange has grown too long through service the shoe quickly cuts it down to its proper length.

Another saving which should be overlooked is in brake-shoes, for while the wheel is being ground the regular brake-shoes are not in service on these wheels and are consequently not being worn out. This is a small matter, perhaps 8 or 10 cents for each flat, but it adds that much to the saving the shoe gives, and in case of many flats or long flanges would cut quite a figure.

J. M. GRIFFIN.

The new power-house of the St. Louis Transit Company at Second and Salisbury Streets, St. Louis, Mo., is now in operation. It is a large plant and, it is believed, will supply enough power to permit the company to abandon the Cars Avenue and Bellefontaine power-houses.

London Letter

(From Our Regular Correspondent.)

Since the recent decision of the arbitrator regarding the electrical equipment of the Metropolitan District Railway Company and the District Railway there does not appear to be much in the way of news connected with this interesting problem. The District Railway Company has held an extraordinary meeting, at which Mr. Perks, M. P., presided. During the meeting he referred to the fact that the Metropolitan Company had invited tenders for the construction of a large power house at Neasden, and that the District Company had approached the Metropolitan Company with a suggestion that the former company should supply the current necessary for the Metropolitan Company. As I have outlined in a previous issue, the District Company is making preparations for an enormous power house in Chelsea, which I am informed will be the largest power house in the world. It is being constructed with a view to supplying current not only for the District Railway, but for two other enterprises which Mr. Yerkes controls, viz., the Charing Cross and Hampstead Tube, and also the tube from Hammersmith to Enston. As in a large station of this kind it will be possible for the District Company to generate current at a minimum figure, Mr. Perks seems to think that it would be good business policy for the Metropolitan Company to purchase its current from this station, and so prevent a duplication of plant.

It is interesting to note that the Central London Railway is about to seek powers in Parliament in a bill called the Charing Cross, Hampstead & District Electric power bill, by which, if it is successful, instead of having only a straight line from the bank to Shepherd's Bush the company will have a complete circle returning from Shepherd's Bush by way of Hampstead, Hyde Park, Piccadilly, Strand, Fleet Street, etc., giving them a complete circle. This would, of course, enormously mutliply the traffic and give the company a most valuable franchise. It is easy to see that the franchise will be opposed most strenuously by the District Railway and other interests.

In the meantime, as there are a number of other bills in Parliament for underground tubes which will cross Hyde Park, St. James Park and the Green Park in various directions, the attention of the authorities governing these parks has been attracted, and opposition will probably be aroused owing to the alleged danger to vegetation. So far as would appear from the reports of engineers, this danger is altogether visionary, but still opposition will undoubtedly be aroused in this direction. It will be remembered that the same opposition occurred when the Charing Cross & Hampstead Railway was organized, as it was feared that Hampstead Heath would be injured in the same way.

A bill for authority to connect North Shields and South Shields on opposite sides of the river Tyne by means of a tube railway operated electrically will be brought up this session in Parliament. A single tube only is contemplated with a diameter of 13 ft. They propose to erect a generating station in South Shields, and the capital is proposed to be £180,000, and the time sought for the construction of the railway is five years from the passing of the act. The proposed rates for passengers are to be 2d. per single journey in the first-class carriages, and 1d. in the second-class carriages.

At a recent meeting of the Leicester Town Council the tramway committee reported that the transfer of the tramways undertaking from the company to the Corporation was completed on Dec. 31, 1901, and that the undertaking is now in the control and management of the committee.

The work of equipping Wolverhampton with a surface-contact system of electric tramways is now nearing completion, and one track has been so far completed that it has been possible to make some experimental trips up and down the Cleveland Road. So far as we have been able to gather, this experiment has proved successful, though the system has not been completed so as to make the running perfectly smooth or satisfactory. Mr. Wetmore expects to have the system in working order in the course of a few weeks, and we hope at a later date to give fuller details of this most interesting system.

The Douglas Town Council recently formally took over the tramways within the town recently purchased for the Corporation from the liquidator of the Isle of Man Tramways Company for £50,000.

An erroneous impression has got abroad in connection with the recent switchboard failures at Bath. Reports have been published referring to serious breakdowns on the "old" and on the "new" switchboards. Rumor has attributed this trouble to the switchgear supplied by Messrs. Ferranti, Limited, but the facts of the case are that the original board supplied to the Bath Corporation was superseded last year by a "new" board of another make,

and, on a failure occurring on both of these boards, Messrs. Ferranti were at once called in, and supplied within three days of the breakdown one of their well-known high-tension switchgears, which is already erected and now being connected up to the circuits.

The Worthington Pumping Engine Company, of London, has recently secured an order from the city of Bordeaux, France, calling for the four triple-expansion, high-duty pumping engines which were exhibited by this company at the Paris Exposition. In addition, the company has also been instructed by the same municipality to construct two high-pressure triple-expansion pumping engines. The order included the building, boilers and, in fact, the complete plant exhibited. The Worthington building will be well remembered by all engineers who visited the Exhibition, occupying as it did a prominent site on the banks of the Seine, and on account of its unique character. It was fully illustrated in these columns some months ago.

The Mersey Railway Company, whose system is being connected from steam to electricity by the British Westinghouse Company, has ordered from George F. Milnes & Company, of Hadley, fifty-seven cars of a new and interesting type suitable for its underground work. It is interesting to note also that Milnes & Company are at present making 125 cars for the Hampton Court section of the London United Tramways Company, and a large number of cars for various corporations.

The first car of the new overhead electric system of tramways in Newcastle was inaugurated this month by the Mayor. The first rail was laid in May, 1900, and the system was estimated to cost £400,000, but the contemplated outlay has been more than doubled. There are 20 miles of double track, extending to all the suburbs. The tramways have been constructed under the direction of Mr. Le Rossignol, who has been appointed manager of the Corporation, to which the system belongs, and the work has been done by the British Insulated Wire Company, of Prescot and London.

The construction of the 133 miles of electrical tramways in South Lancashire, connecting Manchester, Liverpool, Wigan, Warrington, Leigh, St. Helens, Bolton and surrounding districts, is being rapidly pushed forward, considerable progress having been made in several lengths. Contracts have been entered into for lines from Haydock, Brough, Ashton and Hindley, from Hindley to Hindley Green, Atherton to Bolton, Atherton to Tyldesley, and Atherton to Leigh and the boundary of Lowton. The contracts for the whole of the permanent way of these tramways, necessary buildings, plant, rolling stock and complete equipment of generating station have been let for £350,414.

The new proposed underground line in Paris has now been settled upon, and the Paris Municipal Council has formally adopted in its main lines the committee's recommendation to grant a concession for a new "tube" railway running between Montmartre at the north end of the city, and Montparnasse at the south end. It may be of interest to note the terms upon which the concessionnaire company proposes to work with the municipal authorities. The company offers to pay to the municipality a tax or due of 1 centime per passenger carried over its line up to 30,000,000 passengers, and 2 centimes per passenger for any number over 30,000,000. This is for second-class passengers; for first-class passengers the due will be 2½ centimes, or 1 farthing. The concessionnaire company is also to provide not less than £20,000, nor more than £80,000, toward the completion of the new Boulevard Raspail. The new line is to be sunk at a much greater depth than the Metropolitan electric lines now in course of construction or already running; the tunneling will be at a depth of from 24 ft. to 115 ft. beneath the street surface. Contrary to what has happened in the case of the City Metropolitan line, the new company is to carry out the entire work at its own expense, and is to undertake to link up with existing lines at certain points. The work is to be carried out without any necessity arising to take up the roadway. The concessionnaires are Messrs. Berlier and Janicot, engineers and contractors. The Omnium Lyonnais, one of the most important electric traction concerns in France, is financing the scheme.

In the last issue a few particulars were published of the power station equipment for Manchester, and in this issue a few details are given as to the recent large order which was placed by the Manchester Corporation for German generators coupled to British engines.

The two main generators for the extension of the Manchester Stuart Street Station are specified to develop an output of 4250 K. V. A. normally, and 4900 K. V. A. for half an hour on an emergency load, the engines being designed to develop 6000 ihp continuously, and 6500 ihp in the case of an emergency, for two hours, when running at a speed of 75 r. p. m. and working condensing. Each engine is also capable of developing continuously a maximum of 5000 ihp when working non-condensing.

Thirty-eight of the motor generators consist each of 150-kw continuous-current low-tension generators, coupled to a high-tension three-phase synchronous motor, running at 500 r. p. m.

The generators are intended for use on lighting and traction circuits, and for this purpose will be compound wound. They will be so arranged that when operating as shunt-wound machines they are capable of giving a voltage of 400 to 450, and, as compound machines, a voltage of 500 to 550.

The ten balancers consist each of 250-kw continuous-current generators, supplying current at 200 to 225 volts, coupled to a three-phase, high-tension induction motor running at 480 r. p. m.

The engines which the Wallsend Slipway & Engineering Company, of Wallsend-on-Tyne, is to construct promise to be the largest yet made for the purpose in Great Britain, the total power for each of the two being over 6000 hp. It is interesting to note that this is the fourth large electric engine contract which Mr. Andrew Laing has carried out at the Wallsend Works. The Manchester engines are to be of the triple-expansion type, but with four cylinders and four cranks.

The total amount of the contract was about £114,000, which was about £36,000 lower than the lowest purely British tender.

A most lamentable accident took place during the past month on the Liverpool Overhead Railway, by which four of the railway employees and two passengers lost their lives. The Dingle end of this railway terminates, curiously enough, in a tunnel which is about one-half mile long, and it was while the train was in the tunnel that the accident occurred. The armature appears to have overheated, created a short circuit, set fire to the car, which in turn set fire to a number of creosoted sleepers lying in the vicinity. The smoke and the flames, blown down the tunnel by a strong draft, appear to have overcome the six unfortunate men, who had evidently lingered behind.

The Aberdeen Town Council resolved to electrically equip the existing tramway routes by Albyn Place and Queen's Road to King Street and Holborn Street. The cost of the undertaking is estimated at £34,446. The overhead trolley system will be adopted, and it is hoped that the work will be completed by the beginning of May. The burg surveyor and the electrical engineer have been asked to report with reference to the equipment for electric traction on the remaining section of the system from Queen's Cross via Rosemount to Union Bridge.

At the recent annual meeting of the Tramways & Light Railways Association the chairman, Sir C. Rivers Wilson, stated that at present it was impossible to get many electric traction projects considered on their merits. If they were promoted in Parliament by private bill, or under the tramways act, they were liable to be blocked by the veto of the local authorities. If they were promoted under the light railways act the opposition of any railway company was practically fatal, and the opposition of the local authorities made the project hopeless. They had hopes from the establishment of the Light Railways Commission that greater facilities would be given in promoting this form of enterprise.

Electrical traction had made considerable progress in spite of all the obstacles it had had to encounter in the past year. When Mr. Atherly-Jones addressed them last year he mentioned that there was at that time 1200 miles of tramway in operation, but that comprised horse and steam as well as electrical traction. The latest figures given for electrical traction alone were 777 miles actually constructed, 533 under construction, and 927 authorized and about to be constructed, making a total of 2237 miles. They were a long way from the figures of their American and Continental friends, but they would observe that progress had been made, and he thought public opinion was gradually awakening to the beneficial results to be obtained from this species of enterprise. The cars running at the end of 1901 were 5844, and he understood that there was an order at the present time for 777. During the present year an event of considerable interest was to take place. A meeting of the Union International de Tramways was, at the invitation of the association, to be held in London between July 1 and 4, and in connection with the meeting there would be an international tramways and light railways exhibition.

The Edison & Swan United Electric Light Company, Limited, have received the honor of appointment by royal warrant as purveyors of electric lamps to his Majesty the King.

At a recent meeting of the Lancaster Town Council contracts were let amounting to £12,455 for the first stage of the electric tramways from Dalton Square, in the center of the town, to Scotforth and Williamson Park. Nearly £5,000 worth of materials will be purchased from Messrs. Walter Scott, Limited, Leeds Steel Works. The permanent way will be laid by the Corporation employees at an additional cost of £9,500.

The Gloucester City Council have resolved to recommend the purchase for £26,000 of the undertaking of the Gloucester Tramway Company. This is to be subject to the sanction of the Board

of Trade and to the granting by the Light Railway Commissioners of an order similar to that already secured by the tramway company, and which would empower the Corporation to construct and work an extended system of electric trams in the city and environs.

At a recent meeting of the Liverpool tramways committee the general manager, Mr. Bellamy, submitted the following traffic returns for the years 1897, 1898, 1899, 1900 and 1901:

Year	Mileage	Passengers	Receipts	Increase in traffic Receipts
1897.....	6,013,180	38,409,084	£290,743	.....
1898.....	6,279,758	41,772,034	314,207	£23,464
1899.....	7,600,546	63,771,450	359,929	45,722
1900.....	9,100,866	82,367,958	417,574	57,645
1901.....	10,970,063	101,108,780	468,383	50,809

Increase in 1901 over 1900: Passengers, 22.7 per cent; mileage, 20.5 per cent; and receipts, 12.2 per cent. Increase in 1901 over 1897, the last year of the old company's management: Passengers, 163.3 per cent; mileage, 82.4 per cent; and receipts, 61.1 per cent.

The Hove Town Council has decided to obtain all particulars requisite to enable it to consider a scheme of the routes, the means of traction, and such other similar details as may be necessary for drawing a bill to be promoted in Parliament in the session of 1903 for empowering the Corporation to provide and work tramways in accordance with the resolutions passed by the Council. They have also instructed the joint committee to make full inquiry as to the working of tramways in other places and report to and advise the Council as to the system or systems best adapted to this locality, and at the same time produce estimates as to the cost of construction, maintenance and working of such system or systems.

The British Westinghouse Company has been awarded the contract for electric cars required by the Lancaster Town Council in connection with the local tramways. The value of the contract is £3,633.

A generating plant, consisting of three 150-bhp direct-coupled sets, with engines by Messrs. Browett, Lindley & Company, has been ordered by the Birkdale & Southport Light Railways Company from Messrs. D. Bruce Peebles & Company, of Edinburgh.

The Northern Counties Electricity Supply Company, Limited, has deposited a bill for introduction into Parliament next session, under which powers are sought to enable them to construct over 15 miles of electric tramways and tramroads in the county of Northumberland. The proposed tramways divide themselves into three distinct sections. The first section comprises a line 7¾ miles from Morpeth to Bedlington. The second section, which is a little over 3½ miles in length, will run from Bedside to Blyth, and the last section, which will be just over 4 miles in length, comprises a line from Ashington to Newbiggin. Power is sought to carry out a large number of widenings of streets and roads along the route of the proposed lines. The generating stations are intended to be erected at Cowpen, Bedlington and North Seaton. The rates chargeable to passengers are not to exceed 1 penny per mile, with a minimum fare of 1 penny. Provision is made for the conveyance of animals, goods and merchandise of every description. Clauses are inserted providing for cheap fares for the laboring classes and prohibiting the raising of fares on Sundays and holidays.

The Wigan Corporation has unanimously confirmed the agreement for the purchase of the Wigan Tramway Company. The undertaking consists of three routes from the borough to Hindley, Plattbridge and Pemberton, with the right to construct a line to Ashton in Makerfield. The price is £45,000. The Corporation proposes to work the trams by electricity in conjunction with the existing system. A. C. S.

The Negotiations at Philadelphia

The announcement of the retirement of Robert E. Foederer from the company holding franchises for the construction of street and elevated railway lines on streets not now occupied by the lines of the Union Traction Company, of Philadelphia, was made Feb. 18, and this is the only important announcement in connection with the plan for the consolidation of the Union Traction Company and the franchise-holding company. A meeting of interests was scheduled for early in the week, but it was not held. It is now said that the new company to be organized will issue $10,000,000 in bonds, not $15,000,000 as originally proposed. The plan to issue $20,000,000 common stock has not been changed, it is said. The published figure of initial rental has been 3 per cent, but it is thought that this will be reduced.

The Metropolitan Merger

The Metropolitan Street Railway Company's plan for a rearrangement of its finances was made public Feb. 14. The plan provides for a lease of the Metropolitan Street Railway to the Interurban Street Railway Company, the latter in turn to be controlled by a new company which was incorporated last week, and which is the Metropolitan Securities Company. The present operating management is to continue in charge. The Interurban Street Railway Company is to guarantee 7 per cent on the entire capital stock of the Metropolitan Street Railway. It is also to pay $23,000,000 into the treasury of the Metropolitan for certain securities to be turned over to the Interurban Company. The Metropolitan Securites Company is to have $30,000,000 capital, to which the stockholders of the Metropolitan Street Railway will have a right to subscribe at par to the extent of 45 per cent of their holdings; in other words, for a total of $23,400,000. A 4 per cent refunding mortgage of $65,000,000 is to be issued to retire the present bonds of the Metropolitan Street Railway Company, which bear a high rate of interest.

In order to raise all this money new financial interests have been invited, and have agreed to invest in the Metropolitan scheme. They apparently do not include J. P. Morgan & Co.

The fact that among these new interests are those of the Pennsylvania and Long Island Railroads has given rise to the presumption that at some future date the Metropolitan Street Railway expects to take in the Rapid Transit Subway system, with which it would be desirable to connect the tunnels which these roads intend to build under the Hudson and East Rivers. But, according to a statement made by Mr. Vreeland, all such plans are merely matter for speculation. This speculation, however, is supported by the fact that the certificate of incorporation of the Metropolitan Securities Company gives that corporation power to acquire elevated, rapid transit, tunnel, and other railroads in New York City and elsewhere.

For the time being it is not intended to go further than changing all the horse-car lines in this city into electric lines, and to refund the bonded debt of the company in such a way that the interest charges will be largely reduced.

Thomas P. Fowler, president of the New York, Ontario & Western Railway, is president of the Interurban Railway, and on Feb. 18 was elected president of the Securities Company also.

The outlines of the present deal are contained in a circular which has been issued to the stockholders, who have been called to vote on the plan on March 20. The circular reads as follows:

Your directors have for some time had under consideration the best means of providing the money (approximately $23,000,000) required to pay the unfunded debt incurred in the purchase of stock of the Third Avenue Railroad Company and to defray the expense of extending the electrical system to upward of eighty miles of Metropolitan lines still operated with horse cars. In accomplishing this result, it seemed desirable to avoid the large increase in the share capital of the company which would be necessary if the requirements were provided by the issue of additional stock. Negotiations inaugurated by Messrs. Kuhn, Loeb & Co. have resulted in a proposition which not only meets this objection but offers several important advantages over any other plan which has been considered. While assuring a continuation of the present dividend rate of 7 per cent per annum, it secures to the stockholders participation in the future growth of the street surface railroads of New York City, through the opportunity to subscribe for almost 80 per cent of the stock of the Securities company hereinafter mentioned. The new Securities company will be in a more advantageous position than any existing company to undertake such arrangements with respect to other transportation systems as may become desirable, with a view to affording more comprehensive facilities for public travel in the city of New York than is possible under present conditions. Your directors have accordingly acted favorably upon the proposition, and recommend it to the stockholders, to whom it is now submitted for approval.

The Metropolitan Securities Company has been organized under the laws of New York, with a capital stock of $30,000,000, all of which has been underwritten at par by Messrs. Kuhn, Loeb & Co., conditioned upon the ratification of the lease hereinafter referred to.

The Securities company has acquired all of the outstanding capital stock and other securities of the Interurban Street Railway Company, which has an authorized capital stock of $20,000,000 and owns and controls franchises for the construction and operation of street railroads on an extensive mileage of streets in the Borough of The Bronx and adjacent territory. An agreement has been entered into between the Securities company and the Interurban company by the terms of which the Securities company is to pay into the treasury of the Interurban company at least $23,000,000 in cash, as required for the purposes hereinafter stated, receiving in return stock of the Interurban company at par and debentures bearing interest at a rate not exceeding 4 per cent per annum. The agreement further provides that the Securities company shall acquire any further stock and securities that the Interurban company may hereafter issue.

An agreement of lease has been entered into (subject to the approval of stockholders) between the Metropolitan Street Railway Company, as lessor, and the Interurban company, as lessee, by the terms of which the Interurban company agrees to do the following things, among others:

(a) Assume the fixed charges of the Metropolitan Street Railway Com-

pany and unconditionally guarantee 7 per cent per annum upon the entire amount of its capital stock, payable quarterly; and

(b) Pay $23,000,000 into the treasury of the Metropolitan Street Railway Company in return for the securities liberated by the payment of the unfunded debt and other assets now almost entirely unproductive, said sum of money to be expended in liquidating the unfunded debt and in completing the electrical equipment of the Metropolitan system and to be paid as required for those purposes.

The stockholders of the Metropolitan Street Railway Company are to be accorded the privilege of subscribing at par for an amount of the stock of the Metropolitan Securities Company equal to 45 per cent of the par value of the capital stock of the Metropolitan Street Railway Company—that is to say, for $23,400,000 of such stock out of the total capital of $30,000,000.

It is also proposed in connection with the foregoing plan that the Metropolitan Street Railway Company shall create a refunding mortgage to secure an authorized issue of $65,000,000 of 4 per cent one-hundred-year refunding bonds, of which about $54,000,000 are to be reserved to retire and refund the several issues (twenty-seven in all) of existing bonds secured by liens upon various parts of the Metropolitan system (excluding the Third Avenue lines), as they respectively mature, and also for refunding in advance of maturity such of the existing bonds as can be advantageously acquired either by purchase or by way of exchange for the new refunding bonds. By the terms of the agreement of lease, the Interurban company, as lessee, must provide the interest upon the bonds to be issued under this refunding mortgage, as well as all other fixed charges, without impairment of the guaranteed annual payment of 7 per cent upon the amount of the capital stock of the Metropolitan Street Railway Company. As most of the existing bonds bear interest at rates ranging from 5 to 7 per cent per annum, it will be possible by means of the 4 per cent refunding bonds to gradually accomplish substantial reductions in the average rate of interest upon the company's funded debt. The remainder of the refunding bonds not reserved for refunding purposes are to be issued against expenditures made and to be made upon lines of subsidiary companies and for other corporate purposes, and may be issued under the agreement of lease, in lieu of other assets, in part reimbursement of the funds to be provided thereunder.

The board of directors of the Interurban company have given assurances that the present operating management will be continued in charge of the Metropolitan system, and will direct the expenditure of the funds to be provided as above stated.

The Metropolitan Securities Company has been organized under the provisions of the Business Corporations law of this State. The amount of its capital stock is $30,000,000, and the duration of the corporation is to be one thousand years. The purposes of the company are stated to be:

To subscribe for, purchase, invest in, hold, own, assign, pledge and otherwise dispose of shares of capital stock, bonds, mortgages, debentures, notes and other securities, obligations, contracts and evidences of other indebtedness of corporations of the State of New York, or of any other State, including corporations which own, operate or lease, or which are organized for the purpose of constructing, owning, operating or leasing street surface railroads, elevated railroads, rapid transit railroads, underground railroads, tunnels, bridges, tunnel railroads, railway terminals or railroads of any character or description in the city of New York or its suburbs or in territory adjacent thereto, and corporations engaged in furnishing or organized to furnish electricity for any lawful purpose, or power in any form for use upon or which may be used upon street railroads or other railroads, and corporations whose funds are or may be invested in the shares of stock, bonds or other securities of any corporations of the character hereinbefore described; to exercise in respect of any such shares of stock, bonds and other securities of corporations any and all the rights, powers and privileges of individual ownership, including the right to vote; to issue bonds and other obligations and to secure the same by pledging or mortgaging the whole or any part of the property of the company, and to sell or pledge such bonds and other obligations for proper corporate purposes; and to do any and all acts and things tending to increase the value of the property at any time held by the company.

The said corporation shall be and is hereby authorized to purchase, acquire, hold and dispose of the stocks, bonds and other evidences of indebtedness of any corporation, domestic or foreign, and issue in exchange therefor its stock, bonds or other obligations.

The company is to have eight directors, the board for the first year consisting of William H. Baldwin, Jr., Edward J. Berwind, Paul D. Cravath, Thomas P. Fowler, George G. Haven, James H. Hyde, Augustus D. Juilliard and Mortimer L. Schiff. None of these men has heretofore been associated with the control of the Metropolitan Street Railway Company. All are well known in the financial world, and their presence on the board of the new Securities company gives rise to the assumption that several powerful corporations and financial institutions with which they are affiliated are interesting themselves in the development of the transportation systems of the city of New York. William H. Baldwin, Jr., is president of the Long Island Railroad Company, which is controlled by the Pennsylvania. Messrs Berwind and Fowler are respectively president of the Berwind-White Coal Mining Company and president of the New York, Ontario & Western Railway Company, and both being directors of the Atchison, Topeka & Santa Fe, are classed also as in a sense representing Pennsylvania Railroad interests. Mr. Fowler is also a trustee of the New York Life Insurance Company. Mr. Baldwin is a director of the Equitable Life Assurance Society, of which James H. Hyde, another director of the Metropolitan Securities Company, is vice-president. Messrs. Haven and Juilliard are trustees of the Mutual Life Insurance Company. Mr. Cravath is a member of the law firm who are counsel for Kuhn, Loeb & Co., and Mr. Schiff is a member of that banking firm.

STATEMENT OF MR. VREELAND.

Mr. Vreeland gave out, in addition to the circular to the stockholders, the following statement, which he said he had prepared in order to give the public information as to what the Metropolitan Securities Company and the Interurban Company were going to do, and to set at rest speculation as to the plans of the Metropolitan Street Railway Company.

It will be seen from the communication to Metropolitan stockholders, which is now given to the public and which will be mailed to every stockholder of record to-night, how wide of the mark are the conjectures and surmises concerning our plans that have appeared in the press for the last week or two. It was impossible for me to correct these publications or to explain what was being done. Premature statements on my part might have imperilled the very interests which, in behalf of my stockholders, I was at great pains to secure. I want to emphasize the fact, however, that there never has been the slightest idea of associating the Metropolitan with surface railroads in other cities.

The plan outlined in the communication to our stockholders is simply one of development in and about the city of New York. It looks to present needs and future possibilities. It confers upon Metropolitan stock three great advantages, each contributing strongly to its value—first, a wider market; second, the future equipment and development of the property, and, third, a means whereby such arrangements with respect to other New York transportation systems as may hereafter become desirable can be more easily effected than is now possible.

Put into the briefest compass, this plan contemplates the leasing of the existing Metropolitan properties to the Interurban Street Railway Company, a corporation which now possesses extensive franchises in and above The Bronx territory; the stock and other securities of the Interurban company to be in great part owned by the Metropolitan Securities Company, which will pay into the treasury of the Interurban $23,000,000 in cash, to be used to liquidate the unfunded debt of the Metropolitan Street Railway Company and to complete its electrical equipment; all the fixed charges of the Metropolitan to be assumed by the Interurban, which will unconditionally guarantee to the Metropolitan stock an annual dividend of 7 per cent; the Metropolitan stockholders to have the right to subscribe at par for $23,400,000 of the stock of the Securities company, amounting in all to $30,000,000, and the present operating management to be continued in charge of the Metropolitan system and to have control of the expenditure of the fund for the improvement of the Metropolitan properties.

In our experience it has been proved again and again that a well-guaranteed stock is extremely attractive to investors. In the acquisition of the roads now operated by us we have frequently guaranteed dividends ranging all the way from 7 to 18 per cent. The stocks of all such companies are in such demand that they sell to-day on about 4 per cent basis, and so highly are they prized by investors that only in very small amounts can they be bought at all. If our stockholders approve the plan now submitted, an unqualified guarantee will be afforded to the Metropolitan stock of 7 per cent, with additional strength; first, by the immediate expenditure of $20,000,000 in improvements; second, by the association of the Metropolitan franchises with those of the Interurban company, and, third, by the support of $30,000,000 of new capital incorporated in the Securities company. This is a guarantee of almost incalculable strength, and from the day on which it goes into effect the price of Metropolitan stock in the market can be measured only in the sum of money that investors will pay for a security that will yield 7 cents on the dollar at par, with as much certainty as anything that lies in human calculation.

The advantage derived from having our immediate wants provided for without the necessity of increasing our stock or in any other way adding to the volume of our securities is of signal importance. The occasion of a present large expenditure is to pay off the indebtedness caused by the purchase of the Third Avenue road and to change the traction on certain Metropolitan lines from horses to electricity. Of the money heretofore raised for the improvement of the Third Avenue system there is still unexpended and now available more than $6,000,000. Our arrangement with the Securities company, if approved, will give us an additional $13,000,000 of cash with which to complete the electrical equipment of the Metropolitan part of the system. So that nearly $20,000,000 will go straight into the development of Metropolitan properties, thereby largely increasing their value, without the issue of a single new security.

That is one side of the transaction. What is the consideration to the new company for the obligations it assumes? In the first place the new company gets the future development of the Metropolitan Street Railway system beyond the payment of 7 per cent upon the Metropolitan capital, and beyond the payment of its full interest charges, and my estimate is that when these moneys have been expended upon the property which are provided for by the new capitalization, the surplus earnings of the property will alone make the stock of the new company a good investment. In addition to that, we transfer to the new company the floating assets of the Metropolitan, bonds, stocks, claims, etc., equal in value, in my judgment, when fairly realized upon—not now, but in the future—to the full capitalization of the new company, so that if these estimates of mine are correct, the value of the lease and the value of the securities should make the new stock very desirable. Therefore I have insisted that up to the extent of about $23,400,000 of the investment in this new corporation, that being the amount of money about to be raised for the future uses of the Metropolitan company, my stockholders shall have a right to participate, if they desire, in the investment.

Of course the question arises, Why not sell these assets and raise the money directly? The answer to that is, with regard to most of them, they are not in condition for immediate sale, and, with regard to all of them, they are

increasing in value to such an extent that it is better to hold them in capital account than to dispose of them. The Third Avenue Railroad stock, $8,000,000 of which is to be transferred to the new company, will not sell for its full value as an investment security until our management of the property shows how absolutely secure an investment in this stock would be, based upon the earnings of that property. A lot of these stocks which are transferred to the new company, while in the course of time they will be extremely valuable, cannot be sold now without dismembering the property. Stockholders, therefore, of the Metropolitan Street Railway Company voting for this lease should understand that the privilege of taking the stock in the new company is, in my judgment, important.

The other important feature of the transaction which I ought to comment upon is that about one-fifth of the new capitalization is taken at par by gentlemen not heretofore identified with the property. The property has reached a size and magnitude, and circumstances are such, that some move of this sort is, in my judgment, absolutely necessary for my stockholders, and I do not want figureheads with me. I want gentlemen who have got their money invested, the same as we have. A few men have built up this property, but there is as much to be done in the future as there ever has been in the past. One-half of its mileage below Fifty-Ninth Street is still operated by horses—more horse car mileage than there is now in all the rest of the United States.

The proposition now submitted to our stockholders has come to us from gentlemen who have profoundly investigated the whole matter, who believe in the future of these properties, and who expect to stand by them. They have made their organization in such a way as to enable them to carry out this transaction and any other that may hereafter seem to be in the interest of the public and of these properties. Once assured of obtaining a lease of the Metropolitan, they stand ready to take the whole of the Securities stock or any part of it that may be left after the privilege, which I have insisted upon for the benefit of our existing stockholders, has been satisfied.

We are thus associating ourselves with strong men and strong influences in every way beneficial to us, and are securing to ourselves the opportunity not only of developing the roads now owned to the fullest extent possible, but of engaging in the further solution of the great transportation problem hereabouts as it may be presented in the public requirements of the future.

How important this phase of the matter must be was forcibly presented to my mind when we bought the Third Avenue stock. There was then no Securities company to facilitate that transaction, and but for the individual coöperation of one or two men heretofore identified with our company it would have been impossible for us to have obtained a property which is now so important and valuable a part of our system. It had to be done with borrowed money and upon individual credit.

If the arrangement now proposed is approved by the stockholders of my company, they will find themselves, in my opinion, in a much stronger position in every respect than they have ever been before, and they will give to the people of New York the assurance of a transportation system intelligently worked out upon plans that will grow as the city grows and meet its requirements promptly, safely and completely.

The Interurban Street Railway Company, of which mention is made above, has the following officers: President, Thomas P. Fowler; vice-president, Forsythe Wickes; secretary, Roberts Walker. Among the directors of the company are Messrs. Fowler, Walker and Wickes, W. H. Baldwin, Jr., Geo. G. Haven, Paul D. Cravath and Edwin J. Berwin. A gentleman intimately acquainted with the plans of the company said, in a recent interview with a representative of this paper: "The Interurban Street Railway Company was incorporated last year as a successor to the North Mount Vernon Street Railway Company, whose franchises, property, etc., were sold under foreclosure. The Interurban Company owns a street railway line in Mount Vernon, which connects with the system of the Union Railway Company. It also controls by ownership or lease franchises for upward of fifty miles of streets in the borough of the Bronx and adjoining territory, including the franchises of the Peoples Traction Company and the franchises and property of the New York, Westchester & Connecticut Traction Company. The Interurban Street Railway Company has a capital stock of $20,000,000, all of which will be owned by the Metropolitan Securities Company in case the proposed lease takes place. The company has no bonded debt.

It will take several million dollars to carry out the company's own plans for electric railway construction in this district. The difference between the capital stock of the company and the money received from the Metropolitan Street Railway Company will be represented by securities or obligations in some form, all of which will be held by the Metropolitan Securities Company."

Thomas P. Fowler, the newly elected president of the company, said in an interview on Feb. 19: "I recently accepted the presidency of the Metropolitan Securities Company and the Interurban Street Railway Company on the distinct understanding that my tenure of office would be temporary. My time is fully occupied with the affairs of other corporations with which I have long been connected, and I have no present intention of resigning the presidency of the New York, Ontario & Western Railway Company. An important feature of the new Metropolitan plan is that the very capable management of the past will be continued in the future, not only of the lines as they now exist, but also of the improvements and extensions which are being provided for."

New Brooklyn Rapid Transit Bonds

The directors of the Brooklyn Rapid Transit Company have decided to recommend to stockholders of the company a plan to issue a general mortgage to secure bonds not to exceed $150,000,000, and a special meeting of the stockholders of the company has been called for March 20 to vote on the proposition of mortgaging the property to secure the bonds. The bonds are to be issued for the retirement of the outstanding bonds of the company, and for the purpose of acquiring additional property and securities. These outstanding bonds amount in the aggregate to $61,065,000, this including the present Brooklyn Rapid Transit $7,000,000 mortgage, which signifies, therefore, that the increase in the bonded debt of the company—presuming all the new bonds are issued—will be approximately $89,000,000.

The announcement of the plan to issue the bonds was as follows:

The board of directors of the Brooklyn Rapid Transit Company, at a meeting on Feb. 11, unanimously decided to submit for the approval of the stockholders at a special meeting, to be called for March 30, 1902, a mortgage to secure bonds to the amount of not exceeding $150,000,000.

The proposed mortgage is to be called general consolidated and collateral trust mortgage, and the bonds are to bear interest at the rate of not exceeding 4 per cent per annum. Under the provisions of the mortgage the bonds that are issued thereunder, other than those required for the retirement of the outstanding bonds of the company, can be issued and used only for the purpose of acquiring additional property and securities.

The Brooklyn Rapid Transit Company is a securities holding company, and the mortgage is to cover all the stocks and bonds and other property of every description now owned or hereafter to be acquired by the company, subject only to the lien of the present Brooklyn Rapid Transit $7,000,000 mortgage, provision for the retirement of which, as well as of the outstanding bonds of the other companies of the Brooklyn Rapid Transit system, at maturity or sooner, is made in this proposed mortgage.

In recommending to stockholders a mortgage for so large an amount, the directors have considered the rapidly increasing growth of Brooklyn and the country adjacent, and the present inability of the company's elevated and surface railways to properly fulfil their duties to the public without a large increase of power, equipments, improvements and extensions, and since everything indicates a continuance of this growth the directors believe it to be the duty of the company to make proper provision therefor from time to time as its development suggests. In order to accomplish this the directors have presented a plan which in their judgment will be elastic enough, broad enough, cohesive enough, and uniform enough to accomplish the object, and this plan is embodied in the proposed mortgage, the terms of which are described above.

The directors also believe that one class of bonds, eventually covering the entire system by replacing all other liens, and which can be sold from time to time as the growth of the business shall require, will simplify and strengthen the company's finances and enhance the value of the property to the stockholders. Out of the $150,000,000 of bonds authorized provision is made for the practical retirement at maturity, or sooner, if advisable, of all the various issues of bonds of the companies of the Brooklyn Rapid Transit system, amounting in the aggregate to $61,065,000, including the $7,000,000 of Brooklyn Rapid Transit bonds referred to above.

Both President Greatsinger of the company and H. H. Porter, a director of the company, subsequently made statements in which they referred to the rapid growth of Brooklyn and the demands for increased facilities, but neither threw any light on the many deals for the acquisition of new properties that were reported in the press. What future acquisition the Brooklyn Rapid Transit will make—and it is reported that the Coney Island & Brooklyn Railroad and New York & Queens County Railway are to be bought, and that the company will bid for the construction of the tunnel under the East River—there is no denying the fact, as President Greatsinger has said, that important improvements must be made in order to keep up with the traffic demands. The opening of the new bridge in the eastern part of Brooklyn will call for many changes in the operation of the company's Eastern District lines, and the construction of the new tunnel under the East River by the city, the construction of the Pennsylvania Railroad tunnel, the opening of the third bridge and other important improvements now under way will evolve on the management of the company many questions for the solution of which too early preparation can not be made.

At a relatively short distance from the Brooklyn end of the bridge that is soon to be opened there lies a practically undeveloped territory, to which migration will be induced because of cheap rents and improved facilities for reaching the thickly populated east side of New York, the present ferry and car service offering no inducement for those who consider expediency. As the running of the surface cars over the present bridge induced migration to the East New York section of Brooklyn because of the transportation conveniences, so the new bridge in the Eastern District will induce migration to the great section north of Broadway, Brooklyn, and to Queens County. The establishment last summer of through lines from the eastern, or Williamsburgh and Greenpoint, section of the city to Coney Island, shows that the company appreciates the traffic possibilities of this section.

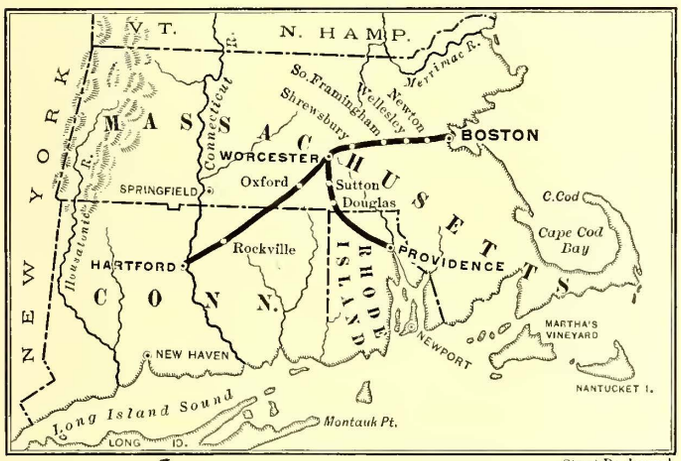
Interurban Street Railways in Massachusetts

The interurban street railways centering in Worcester are designed to give Massachusetts something it has never had in street railways. They are to link Worcester with Boston on the east, Providence on the south, and Hartford on the west.

The proposition of the promoters is to compete with the steam railroads, and local business is given only secondary consideration. This is the first time in New England that anything in the way of interurban street railways has been attempted on so large a scale as that which is proposed. There have been street railway lines built and operated on much the same lines as it is proposed to operate these, but they were in the nature of preliminaries.

Although there is a separate corporation for each line, much of the stock of all three corporations is held by the same persons. First in the field was the Boston & Worcester Street Railway Company, which is just now beginning the actual work of constructing the road. The Hartford & Worcester Street Railway Company, and the Worcester & Providence Street Railway Company are newcomers. They made their first move in the summer, and they are now at work getting locations. They expect to be able to have all their locations soon.

Fred C. Hinds and Charles H. Wilson, of Boston, Thomas C. Perkins, of Hartford, Charles W. Shippee, of Milford, and others are interested in all the companies. It is the intention when the roads are in a condition to operate that they be operated in harmony with each other. They could not be competitors, and they can be of service to each other in handling the through travel.



MAP OF PROPOSED ROADS FROM WORCESTER

The plan to connect Boston and Worcester with a trolley line that would run direct cars at fast time was presented in the summer of 1899 by Edward F. Shaw, son of former State Treasurer E. P. Shaw. The plan was assailed on all sides by the street railway men as impracticable, but the young man stuck to his position and he made such good arguments that he won over the skeptics. He has among his backers, H. Fisher Eldredge, of Portsmouth, N. H., a wealthy brewer.

This young man is at the head of James F. Shaw & Company, street railway constructors, and has had considerable experience in street railway building. A few weeks ago he resigned from the directorate of the Boston & Worcester Street Railway Company in order to take the contract to build and equip the road. The job he has undertaken is worth $1,500,000, and he expects to have it done in a year.

The officers of the company, which were recently elected, are: President, William M. Butler, Boston; vice-president, H. Fisher Eldredge, of Portsmouth, N. H.; executive committee, the president and vice-president, P. W. Sprague, of Boston, and W. H. Trumbull, of Boston; directors, William M. Butler, of Boston; H. Fisher Eldredge, of Portsmouth, N. H.; P. W. Sprague, of Boston; Charles C. Pierce, of Brookline; John J. Whipple, of Brockton; Albion R. Clapp, of Wellesley; Fred C. Hinds, of Newton; Arthur E. Childs, of Boston; Charles W. Shippee, of Milford, and Alexander B. Bruce, of Lawrence. The other companies have not got along so far in their organization.

It has been one of the hardest fights a Massachusetts street railway ever had to put up, that the Boston & Worcester Company has made. All along the line the city and town officials got the idea that the company had a whole pile of money behind it, and they did their best to get all that was in sight. The aldermen of Newton, and the selectman of Wellesley made propositions that were astounding The company has shown anything but a niggardly policy, and it is only because it has been willing to spend money that it has made any headway at all. In the first place it had a fight in the State Legislature with the Boston Elevated Street Railway Company over an entrance to Boston, and lost. Subsequently an arrangement was made to run the cars into Boston over the tracks of the Boston Elevated Street Railway Company. There was a long fight about getting through the city of Newton, and the franchise was finally granted, after the company had agreed to build a new highway. In Wellesley the selectmen have insisted that the company build a new highway on both sides of the track and pay for all land damages. The cost, estimated by the company, would be $140,000, and an offer was made to pay $75,000 for the necessary change in this town. It has been a hard fight here, and it was believed it would be necessary to ask the Railroad Commissioner to compel the selectmen to grant the location on reasonable terms.

The length of the run from Boston to Worcester is 40 miles, practically paralleling the Boston & Albany division of the New York Central Railroad. The estimated time for the run is two hours, and the fare is placed at 35 cents. The railroad uses a few minutes over an hour for the run on the trains that make no stops. The fare is $1. The plan of the Boston & Worcester road is to follow, as far as is practicable, the old stage road called the Worcester turnpike. When that road was built the stage drivers were not afraid of hills. That makes it necessary for the company to do a lot of expensive grading.

To run a street railway on 20-mile-an-hour time through Massachusetts means an expensive roadbed. A 50-mile road cannot be laid out anywhere in the interior of the State without a great deal of grading. The old style interurban trolley has climbed over these hills, but they have to be cut down for the new lines that are to be built.

The route of the Boston line is through some of the prettiest towns in the State. Leaving Boston, it passes through Brookline, Newton, Wellesley, Natick, Framingham, Southboro, Westboro, Northboro, and Shrewsbury to Worcester, where the cars will be run in over the tracks of the Worcester Consolidated Street Railway Company. A change in the route is threatened on account of the stand of the selectmen of Southboro, where Charles F. Choate, Jr., a nephew of the Ambassador to England, is one of the leading citizens, but the general plan will not be interfered with. The Providence & Worcester Street Railway Company is well fixed on the matter of locations in the Massachusetts towns. Before the company can do anything in Rhode Island it must get a charter from the Legislature, but no difficulty in getting it is apprehended. As with the line to Boston, the aim is not to strike the centers of the towns through which it passes, but to get to Providence in the shortest and quickest way. Private land will be used a portion of the way, but there is a most convenient turnpike, the Douglas and Sutton pike, which the company intends to use.

The run from Worcester to Providence is to be approximately 40 miles, and the fare charged will be 50 cents. The run on the New York, New Haven & Hartford Railroad is practically the same length, and the fare charged is $1.10. An arrangement has been made with the Worcester Consolidated Street Railway Company to run cars over its tracks into Worcester, and a similar arrangement will be made at the Providence end with the Union Traction & Electric Company, of Providence.

There is but one town between Worcester and Hartford where the Hartford & Worcester Street Railway Company is still without a location. That is the town of Oxford, where a location not more than half a mile is asked for. It is possible that the aid of the Railroad Commission may have to be sought to get this location, but the company feels that this can be done, as it has locations over the rest of the route. It is within the power of the State Commission to aid street railway companies when obdurate town officials interpose unreasonable objections.

The proposition to build a line between Worcester and Hartford is not as alluring as the other two street railway propositions that have been outlined. The line must pass through a territory which is not thickly inhabited, and the company must rely on the through travel much of the way. Another obstacle it must meet with is the competition of a suburban street railway at the Worcester end of the route. An attractive feature is that the street railway saves 20 miles over the railroad route, and it takes only half an hour longer to make the run between the two cities. The railroad fare is $1.74, and the fare on the trolley cars will be 75 cents. The run is 60 miles, and it will take two and a half hours to make it.

A portion of the line to be operated by this company has already been built. It is at the Hartford end and is called the Hartford, Manchester & Rockville Street Railway. The rest of the line will have to be built. According to the original plans the company in-

tended to run through private land a great deal of the way, in order to make the line as short as possible. Locations on the highways have been secured, but they will not all be made use of.

The construction work of all these lines will be very expensive. Heavy rails are to be used to hold the cars, and the company has promised to equip the line with big and heavy cars that will make the travel almost equal in comfort to that of the railroads in the winter, and better than it in summer.

The Terms of the Atlanta Consolidation Ordinance

As has already been noted, the main provisions in the ordinance that granted permission for the consolidation of the Atlanta Railway & Power Company, Atlanta Rapid Transit Company, Georgia Electric Light Company and Atlanta Steam Heating Company are those that provide for the payment to the city of $50,000 in cash within thirty days after the passage of the ordinance, and those that provide for the payment to the city of the following yearly percentages of gross receipts: For the first three years, beginning with 1902, 1 per cent per annum of its receipts in and without the city of Atlanta; for the following twenty years 2 per cent per annum of said receipts; and thereafter 3 per cent per annum of the said receipts.

However, the ordinance of consolidation contains many other points of general interest, and below it is given in full, only such clauses as have nothing more than local interest being omitted:

An ordinance to provide for the consolidation of the Atlanta Railway & Power Company, Atlanta Rapid Transit Company, Georgia Electric Light Company and Atlanta Steam Heating Company, and for other purposes.

Section 1. The Mayor and General Council of the city of Atlanta do bereby ordain that the authority, right, permission and consent are hereby granted to the Atlanta Railway & Power Company, Atlanta Rapid Transit Company, Georgia Electric Light Company and Atlanta Steam Heating Company, and the successors and assigns of each, to consolidate, unite and merge the said companies, or any of them, and the properties, businesses, stations, lines, tracks, pipes, cables, wires, conduits, rights, privileges and franchises, or any part thereof, of said companies or any of them, in such form and manner, according to such plan, at such time or times, and upon such terms as the companies entering into such consolidation may desire or deem to their best interests. In order to fully and effectually accomplish such consolidation, authority, power and consent are hereby granted to each of said companies, its successors and assigns, to sell, dispose of, lease, assign, set over, transfer and convey all or any part of its business, property, stations, lines, poles, pipes, conduits, tracks, rights, privileges and franchises, and the said rights, privileges and franchises so assigned, set over, transferred or conveyed are hereby regranted and reconsented by the city of Atlanta to the persons or company to which the same are assigned, transferred or conveyed them and tbeir heirs, successors and assigns, upon the same terms and conditions contained in said grants, except as the same may be here modified.

Section 6. Be it further ordained, that the general ordinance on tbe subject of street railways and their operation and control, approved Aug. 22, 1899, and contained in the city code, sections 1351 (a) to 1351 (m), both inclusive, be and the same are hereby repealed. It is also ordained and agreed that said consolidated company, its successors and assigns, shall be allowed to haul and convey freight and property upon and over its railways and lines in the city of Atlanta, subject to such reasonable rules and regulations as may from time to time be adopted by the Mayor and General Council.

Section 7. Be it further ordained, that any and all provisions contained in any general ordinance of the city, or in any section of the city code, or in any of the grants and franchises heretofore made to or now owned by the Atlanta Railway & Power Company, the Atlanta Rapid Transit Company, the Georgia Electric Light Company or the Atlanta Steam Heating Company, preventing or restricting a sale, transfer, disposition or assignment of any part of their property or franchises, or providing for any payment upon gross receipts, or forbidding, restricting, limiting or placing penalties upon consolidation, merger or sale of or by any of said companies, be and the same are hereby repealed.

Section 8. The city of Atlanta hereby reserves the right to condemn such portions of the lines of the street railways now held, owned and operated by the Atlanta Rapid Transit Company, whether then held and owned by the Atlanta Rapid Transit Company, its successors or assigns, or merged into the consolidated company, not exceeding five blocks at any one place, as may be necessary, in the judgment of the Mayor and General Council, for allowing other street car companies to enter the central portion of the city upon payment of just compensation to the railway company whose tracks are so condemned, whether held by the Atlanta Rapid Transit Company or the consolidated company, its successors or assigns.

The city of Atlanta hereby further reserves the right to condemn such portions of the lines of street railways now held, owned and operated by the Atlanta Railway & Power Company, whether then held and owned by the Atlanta Railway & Power Company, its successors or assigns, or merged into the consolidated company, not exceeding five blocks, as may be necessary for the allowing of other street car companies to enter the central portion of the city, upon payment of just compensation to said company, its successors and assigns.

In the event said city shall permit any other company to use the rights, powers and tracks of the Atlanta Rapid Transit Company, the same shall be upon condition that the company so using shall pay a proper sum for the use thereof, the amount to be fixed by the Mayor and General Council. This sum to be paid to the said Atlanta Rapid Transit Company, its successors and assigns, for its use and their use.

The reservation of the right to allow otber companies to use the rights, powers and tracks of the Atlanta Rapid Transit Company on Peachtree Street, from Auburn Avenue south, and on Whitehall Street from Alabama Street south, to Mitchell Street, is without prejudice to the rights and interests which the Atlanta Railway & Power Company has in such tracks, whether such rights and interests are then held by the Atlanta Railway & Power Company, its successors or assigns, or merged into the consolidated company, but as to such tracks the rights of each of said companies now owning or baving an interest therein are to stand and be treated as they now are in the separate companies just as if they had not been consolidated, whether such rights are then held by said separate companies, or their successors or assigns, or merged in the consolidated company.

It is intended hereby that the rights of condemnation herein reserved shall not be in addition to such rights as have been heretofore reserved in the separate franchises, but in lieu thereof.

Section 10. Be it further ordained, that said consolidated company, its successors and assigns, are hereby granted the rigbt and permission to physically connect, merge and consolidate the said properties which it may acquire wherever it desires, and to construct and lay such double tracks, curves, switches, connection, wires, tracks, etc., as it may from time to time deem proper for this purpose, or for the purpose of rendering efficient service, and to straighten out the kink in its track and lines. The right to construct and lay tracks granted hereby is intended to be confined to tbe streets within the present system of the company, and is not intended to grant the right to construct new lines or to build tracks upon streets or sections of streets not now occupied by street railways without the further consent of the Mayor and General Council, it being the intention to allow the full and complete consolidation of the companies hereinbefore referred to and their properties whereby the freest possible use and profit thereof may result to said consolidated company, and so that said company may consolidate, control and operate all of said properties, as it may desire, subject only to proper police laws and restrictions.

(a). Said consolidated company shall within thirty days following the fact of such consolidation pay into the treasury of the city of Atlanta the sum of $50,000.

(b). Said consolidated company, its successors or assigns, shall also be bound to pay on or before the first day of February of each year, beginning with the year 1903, into the treasury of the city of Atlanta, the following percentages upon the gross amounts received by said company, its successors and assigns, from car fares and tolls for passengers and property, or the sale or supply of electric current for light, heat and power, and the sale or supply of steam heat, whether such receipts be carried within or without the limits of the city of Atlanta, to wit: For the first three years, beginning with 1902, 1 per cent per annum of said receipts; for the following twenty years, beginning with the year 1905, 2 per cent per annum of said receipts; and thereafter, 3 per cent per annum of said receipts.

(c). The Mayor and General Council shall appoint or provide for a committee or board to make examinations of the books and records of said company, to ascertain the amount of its said gross receipts, and make report thereof to the General Council prior to Feb. 1 of each year; and said company shall also on or before the first day of February file a statement of such gross receipts sworn to by an officer of the company. Said statement and report shall cover the calendar year; that is, from Jan. 1 to Dec. 31 of the year preceding each February at which said reports and statements are made.

(d). The payment of a percentage of gross receipts above provided for shall be in lieu of specific, occupation, license, excise, special franchise tax not included in ad valorem taxes or charges by the city of Atlanta, and in full of all money demands or charges whatever, except ad valorem taxes, paving charges as now provided by law, and bridge rentals, and whatever shall be at any time required or exacted on any of said accounts, or any account other than ad valorem taxes, paving charges and bridge rentals, shall operate to reduce to that extent the amounts due from the percentages above provided for.

(e). The said consolidated company shall, for the purpose of giving one continuous ride inside the city of Atlanta from a point on one of its lines, which, however, does not carry the passengers on a parallel line or in the same general direction from which he came, grant one transfer ticket on the payment of one full fare, provided such transfer is requested at the time of payment of the fare, provided the company shall have the right to make such reasonable rules and regulations as to limited time in which they are used, so that they will be available only for the first connecting car, and as to any other matters necessary or proper to protect said company from imposition or abuse or assignment of such transfers, and to avoid liability in damages from mistakes by employees in regard to said transfers.

Section 12. Be it further ordained that the terms of this ordinance shall be accepted by said consolidated company upon its formation, so as to bind it to the terms hereof, and the provisions of this ordinance sball not be effective until so accepted. It is further understood and intended hereby that wherever the name "consolidated company" is used herein it means that company into which the companies above-named, or any two or more of them, are consolidated, merged or united, whether one of the existing companies or a new company; provided that no benefit hereunder and no repeal of any ordinance or part thereof made hereby shall accrue or apply to any of said companies not included in said consolidated company, but as to any company which does not come into the consolidation provided for hereby, the city shall and does preserve all said ordinances and all powers and rights which the city now has or may hereafter acquire.

Section 13. Be it further ordained, that should the city of Atlanta ever at any time construct, lease, purchase, acquire, hold, own, use or operate an electric lighting or power plant, then the percentages hereinbefore provided to be paid by said consolidated company sball abate as to the gross receipts derived from the business of supplying electric current, and shall forever after be uncollectable, and tbe city of Atlanta from then on cease to be entitled to any percentages or other sums whatever, on account of the business of supply-

ing electric current of said consolidated company, its successors and assigns.

Section 14. Be it further ordained, that all laws, ordinances, resolutions, or parts thereof, as well as provisions in other grants and franchises, in conflict herewith be and the same are hereby repealed.

The following directors of the Georgia Railway & Electric Company, which is the successor of the consolidated companies, have been chosen: H. M. Atkinson, Dr. R. D. Spalding, Dr. A. W. Calhoun, G. T. Dodd, W. P. Inman, Anthony Murphy, J. C. Hallman, Judge J. L. Hopkins, Forrest Adair, F. E. Block, A. E. Thornton and E. P. Blaek. It is probable that the directorate will be inereased, though. D. A. Belden, who has, up to this time, had charge of the Atlanta Railway & Power Company, will, it is understood, be general manager of the new company, and will have personal supervision of all the ehanges and improvements that are to be made.

The Boston Suburban Electric Companies

Over 99 per eent of the stoek of the Newton & Boston, Commonwealth Avenue, Wellesley & Boston, and the Lexington & Boston street railway companies has been exchanged for stoek of the Boston Suburban Electric Companies, a voluntary organization formed after the manner of the Massachusetts Electrie Companies, with 25,000 preferred shares and 20,000 eommon shares, having no par value.

The Boston Suburban Electric Companies operates more than 80 miles of track, extending from Needham, on the south, to Lowell, on the north, and eonnecting with the Boston Elevated Railway at six junetion points. The lines are all loeated within a thiekly populated district.

The company has recently seeured eontrol of the Waltham Gas & Electric Light Company, and the exchange of stock is now being made on the basis of two shares of preferred and one-half of common of the Boston Suburban Company for each share of Waltham Gas stock. The Waltham company is capitalized for $175,000 stock and $50,000 bonds. The plant will now be used as a power station for the Newton and Waltham lines, besides supplying power and light through the Waltham municipality.

The preferred stoek of the Boston Suburban Company is selling at 88, and the common at 25½. The first quarterly dividend will be paid on the preferred stock April 1, and will amount to 1 per eent.

Chicago Elevated Roads Taxed as Railroads

Aeeording to a recent decision rendered by Judge Tuley in Chicago, the elevated roads of Chicago are to be assessed by the State Board of Equalization, as are the steam roads in the State, and not by the local assessors, as are the street railways of the eity of Chieago. The only point at issue in the suit was as to which valuation was the legal one—that made by the State Board or that by the local assessors. The judge in his decision said, in part:

"It is their charter under the law which they organize that determines their character. The elevated roads could not have been organized, if they had so desired, as street railways under the general railroad act, nor do they beeome street railways because they perform some or all of the functions of a street railroad.

"The Illinois Central and others have tracks devoted solely to suburban traffie, over whieh they perform all the functions of the street railways, yet they do not become street railways by reason thereof. The elevated railroad, organized under the general railroad incorporation law, may earry passengers or freight, or perform all the funetions and purposes of the street railroad, but does not become thereby a street railroad for the purpose of taxation or for any other purposes."

A Trip Around the St. Charles Belt

The New Orleans and Carrollton Light & Power Company has issued a handsome little pamphlet containing a short description of "A Trip Around the St. Charles Belt," illustrated by many handsome half-tones of the views seen en route. Many of the objeets of interest in New Orleans may be seen to good advantage and with perfect eomfort from the street cars of the city, and no more eomfortable manner of making a tour of observation could be found than on the well-equipped ears of the railway company.

Enclosed Fuse Indicator

The new indicator recently brought out by the D. & W. Fuse Company, Providence, R. I., for their enclosed fuses is quite unique among this class of apparatus. It has been designated the "Bull's-Eye Indicator" on aceount of its appearance and construetion, and apparently its operation is extremely satisfactory in every way since it is flashless, quiet and reliable. On the side of the fuse is pasted a label containing the voltage and ampere capaeity, and in the center a small circle or bull's-eye. Before blowing this bull's-eye is elear, but as soon as the fuse breaks down the center of the circle becomes blackened, indieating at a glanee the condition of the fuse. The deviee has been adopted as standard by the D. & W. Fuse Company, having already met with general approval, and is now being placed on all its fuses.

Electric Railways for Industrial Purposes.

These have long been recognized as a great help for the different industries, as, for instanee, in and around manufacturing plants and power stations, for contractors' purposes, and for all general uses for which a railroad could be used to advantage.

Eleetric power is now in most cases so easily to be had that the surplus electric power can be used with little or no additional expense, and so is preferable to animal or steam power. Among the firms that have given this elass of road special attention is the well-known firm of Arthur Koppel, New York. This firm has built many electric roads for industrial purposes, and has also developed portable eleetric railroads, thus making eleetric railroads available for people who have to use it at different plaees, and at each place for a eomparatively short time.

The Arthur Koppel portable eleetric railway can be laid down and completely equipped within just as short a time as the ordinary portable railways using animal power. All the parts eomposing this equipment are light and easily handled. Every detail is worked out so that there is no diffieulty, and even specially construeted and patented cars for stringing the trolley wire enter into the equipment.

These electric railways have been built by Arthur Koppel in many different countries and for many different purposes, as for instanee, factory roads, bringing the raw material into the plant, carrying the different materials around, and finally taking the finished product to the station, for contractors, for plantations, and even for passenger traffie. To give interested parties who are not well acquainted with this type of railroad an opportunity to get acquainted with these industrial electric roads, their working and their equipment, the above-named firm has put up in its office at 66 Broad Street an exaet model of such an electric road in one-tenth actual size. This road is equipped with traek, overhead system, electric loeomotive and many different types of ears, ineluding coal, flat, plantation, eontractors', ete., as well as passenger cars.

This firm has also issued a special catalogue relating to these electric railroads, which will be mailed upon application.

Bridges Guarded at Indianapolis

The West Washington Street bridge at Indianapolis broke down under the weight of a trolley car Jan. 16, as announced previously in these eolumns. The aeeident was a fortunate one, however, for the eompany and public, for the work car and trailer whieh broke the bridge earried no passengers. A ear full of passengers had passed over the bridge just previous. This was one of the most important bridges from a street railway standpoint in the city, being on the street whieh directly connects the main car house and shops with the eenter of town. The bridge which proved defective is being taken down and a report on the factor of safety of all the other bridges in the city is being prepared for the eity by the Pittsburg Testing Laboratory though T. L. Condron, its consulting engineer loeated at Chieago. Pending this report a polieeman has been plaeed at all the bridges in the city to prevent more than one team or car from crossing at a time.

The Mornington Tramway Company, Ltd., which operates a cable line between Dunedin and Morningdon, New Zealand, on the first of the year issued a very pleasant souvenir to its patrons, among other things wishing them a first-class season "on the railway of life." The New South Wales Government Tramways also issued a New Year's eard giving some views of the eompany's lines. These little remembrances will probably aid considerably in keeping the good will of the public for the roads eoncerned.

Street Railway Patents

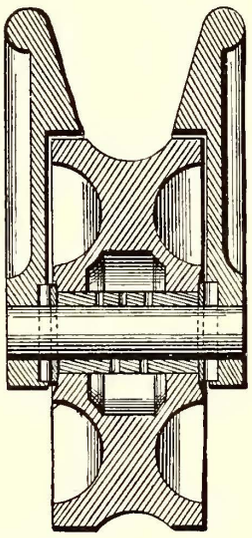
[This department is conducted by W. A. Rosenbaum, patent attorney, Room No. 1203-7 Nassau, Beckman Building, New York.]

UNITED STATES PATENTS ISSUED FEB. 10, 1902.

692,817. Electric System for Railways; Daniel S. Bergin, Chicago, Ill. App. filed May 11, 1901. The contact plow is connected with the bottom of the car through a slip joint, which permits the car to rise and fall without altering the position of the contacts.

692,851. Trolley Harp and Wheel; William A. Heller, Muskegon, Mich. App. filed Oct. 29, 1901. The trolley harp is provided with upwardly extending angular side pieces, the inner face of which approach each other most nearly at points directly above the axis of the trolley wheel and recede from each other forward and in rear of said point to facilitate rounding curves and yet hold the wheel on the wire.

692,898. Electric Railway System; Byron E. Osborn, Auburn, N. Y. App. filed May 13, 1897. A hollow conduit of conducting material is located on the surface of the roadway and contains the main conductor. The conduit is divided into sections, which are energized, as the car proceeds, by electromagnetic switches in boxes immediately beneath the conduit.



PATENT NO. 692,851

692,914. Car Bolster; Ralph V. Sage, Westmont, Pa. App. filed Dec. 10, 1901. A bolster consisting of a combined top and side member made of a plate bent into channel form, the sides being deeper at the center than at the end.

692,938. Car Track Sanding Device; Abraham L. Sprague, Milton, Mass. App. filed July 12, 1901. The box is provided with a rotating wheel having inner and outer buckets which distribute the sand without the aid of valves.

692,974. Combined Underground and Overhead Electric Railway; Daniel S. Bergin, Chicago, Ill. App. filed March 27, 1901. The car is fitted with a trolley pole and a contact plow which are connected together in a circuit with the motor, so that the car can co-operate either with a conductor overhead or one underground when necessity arises.

693,160. Body Bolster for Railway Cars; Morse B. Schaffer, St. Louis, Mo. App. filed Sept. 30, 1901. A cast car bolster having its walls curved for the purpose of avoiding undue strains in casting the bolster.

693,168. Hose Bridge; De Calvus Smith, Colebrook, Ohio. App. filed Nov. 6, 1901. The two sections of the bridge are hinged together, the opening for the hose occurring beneath the hinge and the parts having lateral brackets by which they may be secured to the rail.

693,185. Switch-Throwing Device; Peter L. Swank, Conemaugh, Pa. App. filed Oct. 17, 1901. Consists in connecting the switch tongues to rods arranged at the side of the track and connecting these rods to transversely extending shafts or cranks arranged underneath the rails and having oppositely disposed bell cranks, to which are connected depressible actuating bars adapted to be engaged by the throwing mechanism carried by the car.

693,210. Railroad Track Structure; Victor Angerer and Edward Samuel, Philadelphia, Pa. App. filed Nov. 21, 1896. A diamond-shaped plate is set into that portion of the structure where the rails cross, the plate having flangeways cut therein, forming four diamond-shaped projections.

693,219. Truck frame; Arthur B. Bellows, Pittsburg, Pa. App. filed May 7, 1901. The trolley harp is pivotally connected with ing the central body portion, the I-beam having the lower parts of its end portions cut away, the upper parts and top flanges of the end portions being bent to form pedestals.

693,220. Truck Bolster; Arthur B. Bellows, Pittsburgh, Pa. App. filed Nov. 9, 1901. A truck bolster having its body formed of flanged rolled shapes, the exterior flanges being cut away from the end of the shapes, and having exterior vertical guides secured to the webs of the shapes at the cut-away portions.

693,239. Automatic Motor Car Life Saver; George O'K. S. Conway, Stonefield, Quebec, Can. App. field Feb. 13, 1901. The fender is mounted to yield when struck by an object, the motion being utilized to cut off the power and apply the brakes.

693,244. Electric Railway Construction; Frank P. Derr, Baltimore, Md. App. filed Sept. 11, 1901. Details.

693,309. Trolley Head; Douglas A. Petrie, Duluth, Minn. App. filed May 7, 1901. The trolley harp is pivotally connected with the pole, so as to give the wheel a sidewise movement independent of the pole.

693,351. Overhead Trolley Electric Railway; Bert. D. Gilson, Alexandria, Ind. App. filed June 3, 1901. Details.

PERSONAL MENTION

MR. NORMAN McD. CRAWFORD, general manager of the Hartford Steel Railway Company, has been appointed receiver of the Eddy Electric Company, whose plant is at Windsor, Conn.

MR. FRANCIS A. PRATT, for many years president of the Pratt & Whitney Company, of Hartford, Conn., died suddenly of apoplexy on Feb. 10, after two years of failing health. Mr. Pratt was born in Woodstock, Vt., in 1827.

MR. R. N. BARROWS has resigned as purchasing agent of the Washington Traction & Electric Company, of Washington, D. C., which position he has filled for some time past, and has accepted a position with the Westinghouse Electric & Manufacturing Company. Mr. Barrows will be located at Pittsburgh.

DR. SAMUEL F. GEORGE, president of the Fort Wayne, Dayton & Cincinnati Traction Railroad Company, is paying a visit to New York. While in the city Dr. George will make his headquarters at the Astor House. Plans for extension now being completed will make his road the longest electric line in the country.

MR. H. R. NEWKIRK, formerly of Wendell & MacDuffie, has become connected with C. J. Harrington & Co., dealers in electric light and telephone supplies, of 15 Cortlandt Street, New York. This firm will handle all kinds of railway supplies, and will also have special facilties for taking care of the export trade.

MR. GEORGE MULHERN, general superintendent of the Cleveland City Railway Company, celebrated the fifty-ninth anniversary of his birth, and the fortieth anniversary of his connection with the street railway system of Cleveland, at the Hollenden Hotel a few evenings ago. Mr. Mulhern ventured the opinion that he is the oldest street railway man in point of service in the country. Mr. Edwin Duty, superintendent of the Cleveland Electric Railway Company, who died a short time ago, was older in the service by a few months than Mr. Mulhern.

MR. JAMES J. FITZGERALD, for the past two years private secretary to Mr. Henry A. Everett, and statistician of the Everett-Moore syndicate, has resigned to accept a position with Feder, Holtzman & Co., a leading Cincinnati bond house. Mr. Fitzgerald was with the Montreal Street Railway, of Montreal, Que., for seven years, and is exceedingly well informed on street railway earnings and values. Mr. Fitzgerald will have charge of the street railway bond department of the company with which he has just become connected.

MR. GEO. R. COOK, superintendent of the Pawtucket Street Railway Company, of Pawtucket, R. I., and well known to street railway men throughout the East as one of the pioneers in the business, has been retired on the sick list of the company, and his duties have been transferred to Mr. Raymond R. Smith, formerly of Sherbrooke, Canada, who has been with the Rhode Island Suburban Company, of Providence, for a year or more. About a year ago Mr. Cook had a stroke of paralysis, and since that time has been in failing health. Through the advantages, however, derived from the excellent benefit association now in operation by the Providence railways he is receiving a weekly allowance, and his many friends will be glad to learn that his future will be looked after by the association.

FINANCIAL INTELLIGENCE

THE MARKETS

The Money Market

WALL STREET, Feb. 19, 1902.

The continued heavy expansion of bank loans is the factor of most concern in the money market. On top of the $52,000,000 inerease of the fortnight before, last Saturday's statement showed a further enlargement of $13,000,000. The movement is again explained by large operations of a special charaeter which require great sums of borrowed capital. Following the reeent railroad bond issues, there comes the finaneing of the new Metropolitan Securities Company, in connection with which $23,000,000 in eash must be raised to turn over to the Metropolitan Street Railway Company. This amount, until the new seeurities are issued and paid for by the subscribers, must of course be borrowed, and the probabilities are that the borrowing has been reflected already in the last few bank statements. Loans of the New York Clearing House institutions now stand $13,000,000 above any previous reeord, and surplus reserve is down to the comparatively slender margin of $13,400,000. This is a million more than was held a year ago, and the market is not eonfronted with the heavy speculative movement which absorbed credits so extensively in February and March, 1901. These eomparisons are favorable enough to allay apprehension of any real pinch in money later on in the season. Yet the impossibility of foretelling the further needs of the promoting syndieates throws a eertain element of doubt into the situation which can not be ignored even though present money rates are easy and offerings of eapital rather in exeess of ordinary demands. In the eireumstanees the eessation of gold exports is a natural occurrence. The accumulation of gold by the foreign banks is a helpful feature, as it has caused Paris to eease its efforts to divert floating supplies to the French market. The position of the international trade eredit is still uneertain, espeeially since our January trade statement issued last week shows one of the smallest exeesses of exports oyer imports reeorded in the last few years. Reliable opinion is, however, that the liquidation of obligations ineurred by American bankers last spring and summer has been earried pretty well on toward completion. Locally, the money movement presents no important ehanges except that the return flow of eurreney from the interior is visibly slaekening. Sometimes in March and April the interior banks draw again upon their New York balances, but it is unlikely that this will be done to any eonsiderable extent this season. Exehanges with the Treasury are on a much more normal and satisfaetory basis than they have been for a long while past, so that altogether, if the loan expansion is kept within bounds, the money market ought not to run into any difficulties during the next month or so.

The Stock Market

The details of the Metropolitan money-raising plan are published elsewhere in this issue, and have had little effeet on the market quotations of the Metropolitan shares, which have remained steady around 170-172. The Metropolitan company is virtually making to its stockholders the proposition that if they will put in more of their money to make the necessary improvements and take up the unfunded debt, they will reeeive a 7 per eent guaranteed stock and will be dealt with generously in the apportionment of the new stock.

The proposed $150,000,000 bond issue of the Brooklyn Rapid Transit has ceased to attract any great amount of interest, partly because of the explanation that the bonds are only intended for sale in small pareels, as necessity demands, and partly beeause the speculative parties in the stock are evidently intent upon keeping up the price no matter how much they may have to add to their holdings. Last week's deeline in Manhattan was eheeked by the appearance of the excellent statement of earnings for the Deeember quarter. It looks very much as if the reeent operations have been intended to faeilitate accumulation of the stock, which has beeome quite searee in the market. The general dealings on the Stock Exehange have developed nothing of consequence during the week. Prices still are moved up easier than they are down, but it is manipulation rather than real buying which causes the various advances among individual stoeks. The market would undoubtedly go higher if the publie were inclined to venture in; but unless there is some outside development to give them more eonfidenee the immediate future is quite uneertain.

Philadelphia

The market for Union Traetion this week has reflected some disappointment that definite announeement regarding the combination lease "deal" is so long withheld. A week ago the stoek closed at 37¾. This high point was not touehed again, profit-taking sales causing a gradual deeline to 36¾. All is mere rumor and street gossip so far as the details of the eompany's plans for the future are eoneerned. The general opinion, however, for whieh there would appear to be some foundation, is that Union Traetion shares will be taken over into the new eoneern on an arrangement for a sliding seale dividend guarantee, beginning with 3 per eent the first year and rising steadily to 6 per eent. It is thought, in this event, that the projeeted call for another assessment on the present stock will not be made. Philadelphia Traetion on light transactions has sold up to 100, the highest reaehed since last spring. American Railways has been strong on the quarterly dividend (1¼ per eent) deelaration, and on the earnings statement for six months ending Dec. 31, whieh shows an inerease of 100 per cent in net earnings over the period last year. Railways Company General has eome in for a larger share of attention than it has enjoyed in a long while, the price rising from 4¼ to 5½. The advance is regarded as a purely speculative move. The minor transactions of the week eomprise 700 shares of Pittsburgh Traetion common at 23½ down to 22⅝, 50 Consolidated of New Jersey at 68½, and scattering lots of Fairmount Park Transportation (Philadelphia) at 20½, and Eastern Consolidated at 19⅞ and 20.

In the bond dealings Eleetrie-Peoples Traetion 4s have been active and have held their recent gain, selling at 99¼. Other smaller sales were Consolidated of New Jersey 5s at 110½, Indianapolis Railway 4s at 85, and Syraeuse Rapid Transit 5s at 104⅝.

Chicago

Dealings in the Chieago traction stocks this week have been unusually large, but prices have moved about indecisively with varying changes. City Railway, whieh was quoted at 219 a week ago, fell to 210 on Friday, and then rose abruptly to 218½. Union Traction eommon has vaeillated between 15 and 16, and the preferred between 48½ and 49½, the latter momentarily touching as high as 50¼ yesterday week. West Chicago dropped off to 94½ afer selling as high as 96, then rallied to 95½. Persistent talk of consolidations among the surface lines finds no confirmation; it is still very vague. A high official of the City Railway in a private interview said a few days ago that he believed some plan for unification with Union Traetion was on foot, but as representative of an important block of the stock no overtures had yet been made to him. Regarding the franchise tax situation the City Council has refused to do anything in the matter until the question is submitted and approved by popular referendum. Meanwhile the surfaee lines, ignoring the position taken by the Council, seem bent upon continuing their claims under the 99-year franchise act, and to bring these claims to a test in the courts. The elevated shares, for no particular reason apart from satisfactory earnings records, have been uniformly strong during the week. Metropolitan preferred recovered all that it lost at the time of the dividend reduction, selling yesterday up to 90½ ex-dividend. The common was sympathetically strong on fair-sized trading at an advance to 39½. Northwestern, both preferred and common, rose a point, the preferred to 87½ and the common to 39¼. Lake Street was strong and active, going up from 11 to 11¾, and South Side on a few sales rose from 107¼ to 108½.

Other Traction Securities

The feature of the week in Boston was the heavy buying of Massachusetts Electric stocks at advancing prices. No explanation is given apart from the statement that some of the constituent properties are likely to pay larger dividends this year than last, and that it would not require much of an increase from present earnings to warrant 4 per eent being distributed to the holders of Massachusetts common. These shares, after selling as low as 34¾ yesterday week, rose to 37¾ on Monday, and the preferred went up from 94¼ to 97¾. Boston Elevated continues to show weakness on light dealings around 161¾ and 162. West End is unchanged at 95. North Jersey Street Railway stock was quoted 1½ points higher at 26½ bid on the New York curb last Friday, and the bonds were advaneed to 82 bid. The courts have upheld the lease by this property of the Consolidated Traetion of New Jerscy. The renewal of the upward movement in United Railways securities has been the main incident of the week's business in Baltimore. From 15½ the common stock advanced to 16⅜ yesterday, and the income bonds rose from 69¼ to 70⅝. Rumors were eireulated of an impending change in the management of the eompany. The 4 per eent bonds were strong at a

small gain to 97¾. All issues were dealt in quite extensively. Other Baltimore sales for the week included Nashville Railway 5s at 62⅞, Lexington Railway 5s at 102¼, Knoxville 5s at 98½, Charleston Electric 5s at 90 up to 91, and City and Suburban of Washington 5s at an advance from 90 to 93¼. The last-named move was influenced by the payment of the February coupon, which up to a short while ago had not been expected. The Cleveland Stock Exchange had another quiet week. The surprising feature was the sale on Feb. 11 of 100 shares of Cleveland City at 99½, a drop of 12½ points from last sale, evidently a case of some one needing the money, as it held firm at 108 asked. Uncertainty with regard to the future of Cleveland Electric caused few sales, only 65 shares changing hands during the week. There was an advance, however, from 77 to 79½. Something over 600 Detroit United changed hands at 65 and 65½, practically no change from the week before. Northern Ohio Traction common sold at 30, an advance of 2 points from last sale. On Monday Cleveland Electric showed increasing strength; 86 was asked at the close, and 100 shares sold at 85. One hundred Cleveland City sold at 105.

Security Quotations

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

	1902 Closing Bid	
	Feb. 10	Feb. 18
American Railways Company	†44	44¾
Boston Elevated	162	161½
Brooklyn R. T.	66⅝	62¾
Chicago City	219	215
Chicago Union Tr. (common)	15	14½
Chicago Union Tr. (preferred)	49½	48½
Cleveland City	..	†105
Cleveland & Eastern	30	†31
Cleveland Electric	75	82
Columbus (common)	47	47
Columbus (preferred)	101	101
Consolidated Traction of N. J.	68¼	68¼
Consolidated Traction of N. J. 5s	110¼	110¼
Consolidated Traction of Pittsburgh (common)	23½	23¼
Consolidated Traction of Pittsburgh (preferred)	64¾	64½
Detroit United	65	65½
Detroit United Certificates	66½	65½
Electric People's Traction (Philadelphia) 4s	98½	99
Elgin, Aurora & Southern	35	..
Indianapolis Street Railway	†60	†60
Indianapolis Street Railway 4s	85½	85
Lake Street Elevated	10¾	11¼
Manhattan Ry.	133⅝	133¼
Massachusetts Elec. Cos. (common)	35	37¼
Massachusetts Elec. Cos. (preferred)	94	97
Metropolitan Elevated, Chicago (common)	38	38½
Metropolitan Elevated, Chicago	88¾	90
Metropolitan Street	171⅝	171⅛
New Orleans (common)	30	30½
New Orleans (preferred)	105	105
North American	93	92
Northern Ohio Traction (common)	28	..
Northern Ohio Traction (preferred)	88¼	..
North Jersey	25½	26½
Northwestern Elevated, Chicago (common)	38¼	38½
Northwestern Elevated, Chicago (preferred)	86½	86
Philadelphia Traction	99½	99¾
Rochester (common)	44	44
St. Louis Transit Co. (common)	32	30¾
South Side Elevated (Chicago)	107¼	107
Southern Ohio Traction	78½	a65
Syracuse (common)	21	21
Syracuse (preferred)	61	63⅛
Third Ave.	131	130
Twin City, Minneapolis (common)	109⅝	110⅞
United Railways, St. Louis (preferred)	84¾	84
United Railways, St. Louis, 4s	89¼	89
Union Traction (Philadelphia)	37¾	37

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

Iron and Steel

The main features of the iron and steel market this week are the same that had already become familiar to every student of the situation. Production failing to keep pace with consumption, exports changing to imports, and orders being hurriedly given for the second half of the calendar year, are the principal points to be noted. Prices are still held in check by the powerful heads of the industry, but it requires every effort to overcome the tendency of the natural forces. More is heard about a possible famine in steel, and it looks as if there will be some further orders for steel rails placed in the foreign markets. Bessemer pig iron is quoted a trifle higher on the week at $17.25, steel billets are quoted at $29 and steel rails at $28.

Metals.

Quotations for the leading metals are as follows: Copper lake, 12½ cents; lead pig, 4⅛ cents; tin pig, 25 cents; and spelter, 4.10 cents.

BIRMINGHAM, ALA.—A suit has been filed in the Chancery Court at Birmingham by C. M. Cole, of Tennessee, asking for a receiver for the Birmingham Union Railway Company. This company owned the East Lake, the Elyton, the North & South Highlands, the Behrens Park, the Avondale and the Ware's Grove lines, all now absorbed by the Birmingham Railway, Light & Power Company. Petitioner says he owns seventy-five shares of stock of the old company, and that as a stockholder he never consented to a transfer of the stock. He alleges that his stock, with accumulations, is worth $100,000. The suit is not taken seriously by either the street railway company or the public.

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

January	1902	1901
Gross receipts	$119,702	$108,411
Operating expenses	64,283	56,891
Earnings from operation	$55,419	$51,520
Fixed charges	33,026	31,371
Net earnings	$22,393	$20,149
The percentage of increase in gross receipts was		10.41
The percentage of increase in operating expense was		12.99
The percentage of increase in earnings from operation was		7.57
The percentage of increase in fixed charges was		5.27
The percentage of increase in surplus was		11.14

WASHINGTON, D. C.—There have been filed in the office of the Recorder of Deeds of the District papers which transfer the control of the Metropolitan Street Railway and Columbia Street Railroad to the Washington Railway & Electric Company. This is the beginning of the actual consolidation of all the street railway lines controlled by the Washington Traction & Electric Company under one name. The original controlling company did not have the authority to change the names of the roads brought under its management, but was compelled to have a set of officers and managers for each. The Washington Railway & Electric Company was organized a short time ago, and was given authority to purchase and control certain other railway lines under the charter of the Washington & Great Falls Railroad Company, which effected the organization of the new company merely by changing its name for the payment of the lines purchased the new company proposes to have an issue of $17,500,000 in 4 per cent bonds and $15,000,000 of stock. The mortgage, which was filed with the agreement to secure these bonds, covers not only the property of the three railway companies entering the consolidation, but also the stock and bonds of the other companies owned by the new concern. Of the new issue of bonds $7,607,650 is to remain in the treasury to purchase the underlying bonds, $7,992,000 to take up the Washington Traction 5 per cent bonds on a basis of $550 for each $1,000 bond, and $1,500,000 is to be left in the treasury for improvements.

WASHINGTON, D. C.—General George H. Harris, vice-president of the Washington Traction Company, has submitted to the House of Representatives the annual statements of the various companies controlled by the Washington Traction Company. The report of the Columbia road shows that the amount of capital stock paid in is $400,000, the total amount of funded debt, $1,000,000; amount of dividends declared, $24,000; total cost of road and equipment, $1,348,563; number of cars, 52; number of passengers carried, 8,027,781; receipts from passengers, $216,079. Total receipts from all sources during the year, $222,927. Total expenses of operating road and repairs, $104,982. The report of the Metropolitan Railroad Company shows a capital stock of $1,000,000, of which amount $985,920 is paid in; the total almount now of the funded debt is $2,350,000; amount of dividends declared, $8,826.75; total cost of road and equipment, $3,140,672; length of road in miles, 11.135; number of cars, 353; number of passengers carried, 25,176,882; total expenses of operating road and repairs, $366,818; receipts from passengers, $755,781; total receipts from all sources during the year, $790,841; total payment during the year, $1,163,219. The report of the Brightwood Railway Company shows a capital stock of $108,530, of which amount $107,720 is paid in, the total amount now of the funded debt is $350,000; amount of floating debt, $348,164. No dividends were declared during the year. Total cost of road and equipment, $651,637; number of cars, 10; total number of passengers carried, 2,012,012. Total expenses of operating road and repairs, $53,256; receipts from passengers, $52,972; total receipts from all sources during the year, $53,686; total payments during the year, $85,518. The report of the Washington & Great Falls Electric Railway Company gives the amount of capital stock as $150,000, of which sum $86,800 is paid in. The total amount now of the funded debt is $40,000; the amount of floating debt, $268,713; total cost of road and equipment, $759,752; number of cars, 22; number of passengers carried, 1,826,585. Total expenses of operating road and repairs, $39,345. Receipts from passengers in the district, $28,371; in Maryland, $44,553; total, $72,924; total receipts from all sources, $73,906; total payments during the year, $88,251. The report of the City & Suburban Railway, including the period from Oct. 12 to Dec. 31, during which the property has been in the hands of Allan L. McDermott, receiver, shows as follows: Amount of capital stock, $1,750,000; amount of capital stock paid in, $1,749,170; floating debt, $240,159, funded debt, $1,750,000; total cost of road and equipment, $3,577,258; length of road in District 11.31 miles; in Maryland, 4.59 miles; total number of passengers carried, 6,816,021; number of cars, 54; number of motors, 146; cost of maintaining road and real estate, $7,915; cost of general superintendent, salaries of officers, etc., $10,422; wages to employees, $64,722; total expenses, $162,932; receipts from passengers, $231,540; total receipts, $235,126; total payments, $336,871. The report of the Anacostia & Potomac River Railroad Company shows capital stock, $2,000,000;

amount of capital stock paid in, $1,998,100; amount of funded debt, $2,250,000; cost of road and equipment, $4,133,741; length of road, 15.525 miles; number of cars, 44; motors, 60; passengers carried, 8,435,988; cost of maintaining road and real estate, $5,596; of general superintendent, salaries, etc., $9,926; wages to employees, $72,406; total expenses of operating road and repairs, $167,994; receipts from passengers, $261,303; total receipts, $265,295; total payments, including interest, etc., $424,471. The report of the Georgetown & Tennallytown road shows: Capital stock, $200,000; cost of road and equipment, $430,808; no cars or horses; number of motors, 12; passengers carried, 1,037,338; cost of maintaining road and real estate, $520; of general superintendent, salaries, $1,896; wages to employees, $10,448. Total expense of operation and repair, $34,490. Receipts from passengers, $32,666. Total receipts, $33,318. Total payments, $52,669.

MERIDEN, CONN.—The Connecticut Railway & Lighting Company has purchased the Meriden, Southington & Compounce Tramway, which operates an electric railway from Meriden to Lake Compounce. The consideration is not made known.

DETROIT, MICH.—The $25,000,000 mortgage authorized by the directors of the Detroit United Railway to secure a like amount of 4½ per cent gold bonds due in 1932 has been duly executed to the Guarantee Trust Company, of New York, and has been recorded. The mortgage covers all the property of the company. The bonds will be issued immediately and placed on the market by the Guarantee Trust Company. The guaranteed bond holders will be taken care of out of this issue, which will retire all underlying bonds. The mortgage provides that of the entire issue $6,120,000 is to be set aside for the acquisition of additional street railways. This is taken to indicate that the Cleveland bankers propose to carry out the original plans of the Everett-Moore syndicate by not only purchasing the Toledo & Monroe Railway and the Shore Line to Toledo, but to acquire the Detroit, Ypsilanti, Ann Arbor & Jackson Railway.

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

QUARTER ENDING DEC. 31:

	1901.	1900.
Gross receipts	$2,837,148	$2,526,036
Operating expenses exclusive of taxes	1,404,971	1,340,696
Earnings	$1,432,178	$1,185,339
Receipts from other sources	201,287	202,562
Gross income	$1,633,465	$1,387,902
Interest and taxes	753,135	749,857
Net earnings	$880,329	$638,045
Dividend	480,000	480,000
Surplus	$400,330	$158,045
Passengers carried	57,225,850	50,930,530

SYRACUSE, N. Y.—The Syracuse Rapid Transit Company reports earnings as follows:

Quarter ending Dec. 31	1901	1900
Gross receipts	$176,742	$157,962
Operating expenses	96,761	85,744
Net earnings from operation	$79,981	$72,218
Receipts from other sources	1,560	1,541
Gross income	$81,541	$73,759
Fixed charges	57,075	55,895
Net earnings	$24,466	$17,863

The general balance sheet shows: Assets—Cost of road, $7,721,637; stocks and bonds, $34,916; other permanent investments, $82,869; paving assessments, $51,969; supplies on hand, $15,272; bridges, $3,861; open accounts, $17,625; cash on hand, $9,750; Warren Street Bridge, $2,178; injuries and damages, reserve account, $26,047; construct Valley Theater account, $4,675; total, $7,970,799. Liabilities—Capital, common, $2,750,000; capital stock, $1,250,000; funded debt, $3,250,000; second mortgage bonds, $586,000; interest due and accrued, $43,445; open accounts, $14,810; insurance reserve account, $181; tax reserve, $12,804; profit and loss, surplus, $63,557; total, $7,970,799.

BUFFALO, N. Y.—Below are given combined comparative operating statement of the owned and controlled companies of the International Traction Company for December, 1900, and December, 1901; for the six months ending Dec. 31, 1900, and the six months ending Dec. 31, 1901; for the period of four months ending Dec. 31, 1900, and for the period of four months ending Dec. 31.

December	1901	1900
Gross receipts	$263,241	$246,774
Operating expenses	174,824	136,992
Earnings from operation	$88.417	$109,782
Receipts from other sources	7.409	5,746
Gross income	$95,827	$115,528
Fixed charges	95,301	82,553
Net earnings	$526	$32,975
Six months ending Dec. 31		
Gross receipts	$2,922,641	$1,476,058
Operating expenses	1,378,705	730,789
Earnings from operation	$1,543,936	$745,268
Receipts from other sources	109,512	47,789
Gross income	$1,653,448	$793,057
Fixed charges	596,834	488,044
Net earnings	$1,056,614	$305,013
Four months ending Dec. 31		
Gross receipts	$1,120,364	$714,860
Operating expenses	618,008	382,044
Earnings from operation	$502,356	$332,816
Receipts from other sources	35,237	17,516
Gross earnings	$537,593	$350,332
Fixed charges	289,628	246,251
Net earnings	$247,965	$104,081

TOLEDO, OHIO.—Judge Lockwood has dissolved the injunction restraining the Detroit & Toledo Shore Line from disposing of its bonds. The liens on the road filed by the Strang Construction Company and C. H. Little Company were also released. D. B. Cunningham, the former receiver, will represent the Strang Company in completing the construction work on the line.

COLUMBUS, OHIO.—Robert E. Sheldon, president of the Columbus Railway Company, states that there is no truth in the newspaper reports that the Elkins-Widener syndicate is making overtures for the purchase of the controlling interest in the Columbus Railway. He says that so long as he is president he will not consent to the sale of a controlling interest, but would be willing to consider an outright sale if the price were right.

BEAVER FALLS, PA.—The stockholders of the Beaver Valley Traction Company have decided to increase the capital stock of the company from $1,000,000 to $1,500,000.

PHILADELPHIA, PA.—The directors of the American Railways Company have declared the regular quarterly dividend of 1¼ per cent, payable March 15, to stock of record March 1. The net earnings for six months ending Dec. 31 were $159,190, an increase of $80,646, and surplus after dividends of $74,791.

PHILADELPHIA, PA.—The annual report of the United Power & Transportation Company was held here Feb. 4. The report of the company for the year ending Dec. 31, 1901, follows:

	1901	1900
Income from securities held	$632,475	$594,625
Interest, 4 per cent bonds	359,502	359,484
Taxes, etc.	5,517	11,644
Balance	267,456	223,497
Dividends	250,000	207,500
Surplus	17,456	15,997
Credit profit and loss Jan. 1, 1901	161,627	*245,630
Total credit profit and loss Jan. 1, 1902	179,083	161,627

* Credit profit and loss Jan. 1, 1901.

In his annual report President Riggs says, in part: "During the year 1901 many improvements have been made in the properties in which your company is a stockholder. New car houses have been built; modern power houses erected, equipped and put in operation; large numbers of additional cars and equipments have been purchased, and many miles of light or obsolete rail have been replaced with heavy construction of up-to-date pattern. Your board regards it as a matter of congratulation that the above results have been obtained in the face of the extraordinary increase in operating expenses of the various companies due to the retieing, rebuilding and rebonding of numerous sections of track, and considering the fact that these expenses were further increased $160,000 by reason of higher prices of labor and fuel,"

MILWAUKEE, WIS.—The Milwaukee Electric Railway & Light Company has filed its annual report with the Railroad Commissioner. The total mileage of the road is 138.34, of which 63.73 miles is double, and 10.88 miles is single track. The amount of outstanding stock, and the indebtedness of the company are as follows: Preferred stock outstanding, $4,500,000; common stock outstanding, $6,500,000; bonded indebtedness, $8,000,000; all other indebtedness, $901,214. The total receipts of the railway business separate from other business during the year were $2,032,208. The total disbursements on account of its railway business, separate from disbursements for other purposes, excluding interest of $331,098, were $1,301,937. The total amount charged to construction during the year was $3,359,618. The total amount charged to operating expenses of the railway system during the year was $1,012,348.

MILWAUKEE, WIS.—The Milwaukee Light, Heat & Traction Company has filed with the Railroad Commissioner its annual report for 1901. The report shows the receipts to be: From the railway department, $264,122; from lighting, $61,108, and from other sources, $146, making a total of $325,377. The disbursements were $315,881. The principal items were for the railway department, $163,601; the lighting department, $28,782; interest on bonds, $96,695; dividends on stock, $13,121. The company has outstanding $500,000 of preferred stock, $1,974,000 of bonds, and $43,287 of other indebtedness. The report shows that the company expended $175,000 in construction during the year. It has 81.63 miles of track. The report covers the business of the Racine & Kenosha, the Waukesha, the Wauwatosa and the North Milwaukee lines.

LONDON, ONT.—At the annual meeting of the London Electric Street Railway Company, just held, a half-yearly dividend of 4 per cent was declared, making a total dividend of 8 per cent for the year. The following officers have been elected: H. A. Everett, of Cleveland, president; Thomas H. Smallman, of London, vice-president; C. E. A. Carr, secretary, treasurer and general manager. The directors of the company are: Messrs. Wasson and Moore, of Cleveland; P. W. Broderick and W. M. Spencer, of London; Mr. Holt, of Montreal.

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 Available for Dividends
AKRON, O.						
Northern Ohio Tr. Co.	1 m., Dec. '01	53 384	*30,968	22,516	13,259	9,257
	1 " " '00	38,395	*22,089	16,306	5,148	11.158
	9 " " '01	462,800	263,361	199,439	98,973	100,466
	9 " " '00	387,972	241,782	146,190	109,786	36,404
	12 " Dec. '01	617,011	*350,845	266,166	136,162	130,004
	12 " " '00	513,725	*317,475	196,249	141,133	55,117
ALBANY, N. Y.						
United Traction Co.	1 m., Jan. '02	118,979	89,126	29,853	21,963	7,890
	1 " " '01	107,045	79,196	28 849	19,901	7,948
	7 " " '02	870,342	587,539	282,803	144,980	137,823
	7 " " '01	820,808	553,279	267,529	139,731	127,798
AUGUSTA, GA.						
Augusta Ry.& Elec.Co.	1 m., Oct. '01	18,031	10,012	8,019	------	------
	1 " " '00	15,772	9,668	6,104	------	------
	10 " " '91	169,950	102,279	67,671	------	------
	10 " " '00	157,049	91,785	65,264	------	------
BINGHAMTON, N. Y.						
Binghamton St. Ry. Co.	1 m., Jan. '02	15,169	10,599	4,570	------	------
	1 " " '01	13,367	9,065	4,302	------	------
	7 " " '02	128,560	66,531	62,029	------	------
	7 " " '01	113,589	58,518	55,071	------	------
BOSTON, MASS.						
Boston Elev. Ry. Co.	12 m., Sept. '01	10,869,496	7,336,597	3,532,899	2,896,359	636,539
	12 " " '00	10,236,994	6,828,110	3,408,884	2,932,839	476,044
Massachusetts Elec. Cos	12 m., Sept. '01	5,778,133	3,915 486	1,862,648	937,206	925,442
	12 " " '00	5,518,837	3,659,337	1,859,500	994,294	865,206
BROOKLYN, N. Y.						
Brooklyn R. T. Co.	1 m., Dec. '01	1,035,525	*753,512	282,013	------	------
	1 " " '00	978,026	*672,568	305,459	------	------
	6 " " '01	6,534,045	*4515871	2,018,174	------	------
	6 " " '00	6,137,956	*3902052	2,235,905	------	------
	12 " June '01	12,135,559	*7216008	4,919,551	4,341,748	577,803
	12 " " '00	11,768,550	*7106373	4,662,177	4,135,405	526,772
BUFFALO, N. Y.						
International Tr. Co.	1 m., Dec. '01	270,650	174,824	95,827	95,301	526
	1 " " '00	252,520	135,992	115,528	82,553	32,975
	6 " " '01	3,032,152	1,378,705	1,653,448	596,834	1,056 614
	6 " " '00	1,523,847	730,789	793,057	480,044	305,013
CHICAGO, ILL.						
Chicago & Milwaukee Elec. Ry. Co.	1 m., Jan. '02	10,954	5,873	5,081	------	------
	1 " " '01	8,232	5,639	2,592	------	------
	12 " Dec. '01	171,172	74,015	97,157	------	------
	12 " " '00	140,685	59,515	81,169	------	------
Lake Street Elevated	12 m., Dec. '01	786,462	388,799	397,663	------	------
	12 " " '00	757,954	378,661	379,293	------	------
CLEVELAND, O.						
Cleveland & Chagrin Falls	1 m., Dec. '01	4,306	* 2,420	1,886	1,380	506
	1 " " '00	4,040	* 2,477	1,563	1,417	146
	12 " " '01	47,976	*32,002	15,974	13,023	2,951
	12 " " '00	49,646	* 33,272	16,374	13,294	3,080
Cleveland & Eastern	1 m., Dec. '01	7,473	*3,565	3,908	3,545	363
	1 " " '00	5,171	*3,731	1,440	3,232	†1,792
	12 " " '01	90,390	52,022	38,368	43,678	†4,310
	12 " " '00	62,893	36,672	26,221	36,148	†9,927
Cleveland El. Ry. Co.	1 m., Jan. '02	188,082	106,006	82,076	21,775	60,300
	1 " " '01	166 733	99,263	67,470	18,976	48,493
	12 " Dec. '01	2,296,898	1,265,953	1,030,945	244,231	786,714
	12 " " '00	2,061,505	1,121,037	940,467	258,483	681,984
Cleveland, Elyria & Western	1 m., Jan. '02	18.760	12,983	5,778	------	------
	1 " " '01	15,183	10,820	4,365	------	------
	12 " Dec. '01	249,260	136,865	112,394	57,023	55,371
	12 " " '00	179,698	102,393	77,304	34,562	42,742
Cleveland, Painesville & Eastern	1 m., Dec. '01	11,920	*6,681	5,239	6,042	† 803
	1 " " '00	9,926	*7,084	2,842	6,042	†3,960
	12 " " '01	164,971	*87,102	77,869	72,500	5,369
	12 " " '00	141,112	*89,592	71,520	72,500	† 980
DENVER, COL.						
Denver City Tramway Co.	1 m., Jan. '02	119,702	64,283	55,419	33,026	22,393
	1 " " '01	108,412	56,891	51,521	31,371	20,149
	12 " Dec. '01	1,507,293	818,328	688,965	383,180	305,785
	12 " " '00	1,302,290	722,451	579,839	374,291	205,548
DETROIT, MICH.						
Detroit & Port Huron Shore Line	1 m., Nov. '01	27,979	17,447	10,532	9,466	1,066
	1 " " '00	25,039	16,921	8,118	9,692	------
	11 " " '01	355,195	206,052	149,143	106,163	42,980
	11 " " '00	262,800	151,503	111,297	71,623	39,674
Detroit United Ry.	1 m., Dec. '01	271,441	*153,404	118 037	61,781	56,756
	1 " " '00	239,321	*129,101	110,220	57,120	53,100
	12 " " '01	2,919,171	*1596765	1,322,046	652,277	670,129
	12 " " '00	2,575,277	*1439058	1,136,219	616,468	519,751
Rapid Ry.	1 m., Dec. '01	30,984	* 17,678	13,306	9,692	3,614
	1 " " '00	27,873	* 18,735	9,138	9,692	+ 554
	12 " " '01	386,624	* 223,730	162,894	116,300	46,954
	12 " " '00	290,673	* 170,237	120,436	81,315	39,121
DULUTH, MINN.						
Duluth-Superior Tr.	1 m., Dec. '01	40,541	25,042	15,499	9,219	6,287
	1 " " '00	37,211	23,239	13 973	8,929	5,044
	12 " " '01	453,704	251,315	202,389	109,967	92,422
ELGIN, ILL.						
Elgin, Aurora & Southern Tr.	1 m., Jan. '02	29,075	18,337	10,737	------	------
	1 " " '01	26,599	17,115	9,484	------	------
	8 " " '02	255,706	138,977	116,729	------	------
	8 " " '01	222,143	140,673	81,470	------	------
HAMILTON, O.						
Southern Ohio Tr. Co.	1 m., Jan. '02	23,915	14,737	9,178	7,500	1,678
	1 " " '01	19,854	15,025	4,829	7,500	------
	12 " Dec. '01	337,741	182,954	154,787	90,000	64,787
	12 " " '00	294,907	154,465	140,542	90,000	50,542
LONDON, ONT.						
London St. Ry. Co.	1 m., Dec. '01	12,947	6,280	6,667	1,859	4,808
	1 " " '00	11,043	5,324	5,719	1.682	4,037
	12 " " '01	141,846	84,557	57,289	23,835	33,454
	12 " " '00	119,109	78,501	40,608	21,624	18,985
MILWAUKEE, WIS.						
Milwaukee El. Ry. & Lt.	1 m., Jan. '02	214,884	106,532	108,352	6,540	42,950
	1 " " '01	186,809	106,435	80,374	61,302	19,072
	12 " Dec. '01	2.442,342	1,185,534	1,256,808	755,139	501,669
	12 " " 00	2,220,698	1,129,787	1,090,911	824,665	266,247
MINNEAPOLIS,MINN.						
Twin City R. T. Co.	1 m., Dec. '01	294,341	114,106	180,235	46,850	133,385
	1 " " '00	256,820	104,704	152,115	46,701	105,414
	12 " " '01	3,173,975	1,415,451	1.758,524	666,638	1,091,886
	12 " " '00	2,839,355	1,304,689	1,534,666	624,326	910,340
MONTREAL, CAN.						
Montreal St. Ry. Co.	1 m., Dec. '01	158,196	105,607	52,589	15,185	37,404
	1 " " '00	148,637	96,736	51,901	9,220	42,681
	3 " " '01	479.169	287,307	191,862	44,536	147 326
	3 " " '00	455,530	278,805	176,724	28,018	148,707
NEW YORK CITY.						
Manhattan Ry. Co.	3 m., Dec. '01	3,038,435	1,404 971	1,633,465	753,135	880,329
	3 " " '00	2,728,538	1,340,696	1.387,902	749,857	638,045
	12 " Sept. 01	10,455,872	5,328,649	5,127,223	2,682,132	2 444,091
	12 " " '00	9,950,735	5,195,312	4,755,423	2,688,644	2,066,779
Metropolitan St. Ry.	3 m., Sept. '01	3,750,285	1,563,260	2,187,025	1,148,714	1,038,311
	3 " " '00	3,608,306	1,555,036	2,053,270	1,128,985	924,285
	12 " June '01	14,720,767	6,755,131	7,965,636	4,534,068	3,431,567
	12 " " '01	14,437,134	6,631,254	7,805,880	4,445,720	3,360,160
OLEAN, N. Y.						
Olean St. Ry. Co.	1 m., Nov. '01	4,200	2,044	2,156	1,146	1,010
	1 " " '00	3,934	2.392	1.541	1,597	------
	5 " " '01	25 876	11 077	14,799	7,160	7,640
	5 " " '00	23,837	11,005	12,852	7,276	5,555
PITTSBURG, PA.						
Consolidated Traction	1 m., Dec. '01	304,669	140,941	163,728	91,548	72,180
	1 " " '00	277,439	109,069	168,370	89,807	78,563
	9 " " '01	2,649,656	1,145,651	1,503,905	807,667	694,238
	9 " " '00	2,471,696	1,013,240	1,458,456	799,704	658,752
PHILADELPHIA, PA.						
American Railways	1 m., Jan. '02	78,752	------	------	------	------
	1 " " '01	62 746	------	------	------	------
	7 " " '02	579,962	------	------	------	------
	7 " " '01	503,936	------	------	------	------
RICHMOND, VA.						
Richmond Trac. Co.	1 m., Sept. '01	20,991	15,669	5,322	3,196	2,126
	1 " " '00	20,727	10,770	9,957	3.843	6.115
	12 " " '01	218,569	139,542	79,027	38,618	40,410
	12 " " '00	203,057	108,198	94,859	37,608	57,250
ROCHESTER, N. Y.						
Rochester Ry.	1 m., Nov. '01	85,925	44,963	40,962	25,062	15,900
	1 " " '00	82,225	48,997	33,228	24,229	8,999
	5 " " '01	428,781	232,399	196,382	124,846	71,536
	5 " " '00	405,918	244,182	161,736	120,760	40,975
SCRANTON, PA.						
Scranton Ry. Co.	1 m., Oct. '01	2,638	29,300	adf26661	------	------
	1 " " '00	48,781	34,787	13.993	------	------
	10 " " '01	507,989	295,079	212,910	------	------
	10 " " '00	504,852	298,122	206,730	------	------
SYRACUSE, N. Y.						
Syracuse R. T. Co.	1 m., Dec. '01	63,471	34,374	29,097	19,025	10,072
	1 " " '00	58,365	31,122	27,243	18,606	8,636
	6 " " '01	346,670	188,286	158,384	114,096	44,288
	6 " " '00	304,930	166,236	138,693	111,754	26,939
TOLEDO, O.						
Toledo Ry. & Lt. Co.	1 m., Dec. '01	126,379	*63,632	62,747	37,813	24,934
	1 " " '00	111,847	*53,435	58,412	34,271	24,141
	12 " " '01	1,311,084	* 636,407	674,677	415,168	259,509
	12 " " '00	1,182,517	* 616,945	565,572	409,051	156,521
W. NEW BRIGHTON, S. I.						
Staten Island El	1 m., Dec. '01	15,080	11,916	3,163	8,559	df.†5,396
	1 " " '00	13,177	11.237	1,940	8,333	†6,394
	6 " " '01	125,977	88,229	37,749	52,774	†15,025
	6 " " '00	120,277	76,395	43,882	52,348	† 8,466