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The Mileage System and Maximum Wear of Equipment

The practice of manufacturers in certain lines to base their price on the mileage records of their product involves an interesting point as to the time at which the material should be scrapped. Of course a car wheel, brake shoe or trolley wheel must wear out some time, but as the end of its absolute usefulness rarely synchronizes with the inspection periods, the shop superintendent must often discard apparatus which is good for considerable additional

mileage. If it is the custom of the railway company to inspect its equipments for every 1000 miles run, the additional wear for which the apparatus is still good may amount to 500 or more miles. Unjust as this may appear to the manufacturer, so far as life records of his product are concerned, it is absolutely necessary for the safety of the riding public. Such a cautious policy, of course, injures the manufacturer financially if he is being paid on a mileage basis, but if not it is a benefit to him, since it increases the total amount of apparatus sold; nor does he suffer by comparison with others because the product of his competitors is subjected to the same treatment. It is natural for the maker to claim for his product the maximum life shown by some endurance shop test, but the railway manager cannot afford to utilize his equipment to the last ounce, if he wants to give his patrons the best and safest service.

Central Electric Interchangeable Mileage Ticket

The new interchangeable mileage ticket of the Central Electric Traffic Association presents an opportunity of which many travelers will undoubtedly take advantage. The tickets will be placed on sale by Oct. 5 by most of the lines which have agreed to support the movement. The railways which are parties to this ticket operate 2221 miles of track through populous and prosperous localities in the Central States. This figure will undoubtedly be increased by the addition of several other companies within a few weeks. The aim of the movement, which was set on foot by the formation of the Central Electric Traffic Association, is to enable the electric railways to attract business by the use of the successful methods maintained by steam railroads. Electric lines offer advantages for short-haul traffic which the steam roads cannot give. No sensible reason exists why electric roads, by adopting a mileage ticket of this character, should not increase gradually their average length of haul per passenger. Although in most cases the companies do not operate extensive mileage, they reach points where advantageous connections may be arranged with other companies. In order that necessary changes of cars may be made conveniently by long-distance travelers, schedules should be inspected with care by officials of the transportation departments. The Central Electric lines have taken a long step forward and they should not allow themselves to fall backward because of a failure to appreciate the privileges afforded by organization.

An Unprofitable Segregated Line

The immediate result of segregation of the Central Park, North & East River Railroad of New York has indicated that under present conditions joint operation of the lines owned by this company is unprofitable. The posi-

tion taken by the receivers of the Metropolitan Street Railway when they approved segregation was that the lines comprised in this former subsidiary property were not paying expenses, much less meeting the heavy requirements imposed by the lease, and that therefore the arrangement should be abrogated. An inquiry into the situation, instituted by the Public Service Commission, First District, has brought out the fact that the present gross earnings of the entire Central Park, North & East River Railroad are only about 75 to 80 per cent of the total operating expenses.

The property comprises a horse line on each side of the city between the south end of Manhattan Island and Fifty-ninth Street and an electrified line on the latter crosstown thoroughfare. The investigation which is now under way by the commission is designed principally to ascertain some equitable way whereby the inconvenience to the public produced by the abandonment of transfers between the crosstown division and the Metropolitan lines can be avoided. Into this inquiry will enter, of course, the extent to which the present operating expenses of the segregated road include charges for maintenance. It is believed, however, that this phase of the inquiry will prove merely incidental, because observation shows a low density of traffic with separate fare and light travel on the limited transfers which are given between the three lines operated by the company.

It appears extremely unlikely that universal transfers with 5-cent fares can be restored. The other alternatives seem to be operation under the present adverse conditions with the hope of future improvement, the abandonment of the line or the establishment of a joint rate. The former course could be followed only by an inefficient service for an indefinite period or until rights could be secured to install the trolley system or some other substitute for horses on West Street. The abandonment of the line would end all hope entertained by the security holders of realizing something from their investment, and would mean the destruction of service which is of some value to the public. It should, then, be the concern of both company and city to ascertain what rate of fare will justify the receivers of the Metropolitan system in resuming the exchange of transfers, particularly on the Fifty-ninth Street line.

Through Service by Branch Line Cars

One of the first problems to be solved in establishing a new branch line service on an interurban road is whether the cars shall be operated on a shuttle schedule or run through on the terminal of the main line in regular order. If the through service be inaugurated, the company will be in a position to meet any competition of routes better than when a change of cars is required at the junction point. There is no question that the average passenger prefers to be carried to his destination without change to transferring once or twice en route, even though the speed of the through line may be a trifle slower in some cases. Unless connections are made with the greatest promptness the ensuing delays at the junction points are liable to prove irksome, and in catering to the shopping traffic particularly it is desirable to avoid changes as far as is feasible.

Careful figuring, however, ought to precede the decision to run cars on a through schedule from a branch line to a main line terminal and return. The traffic conditions upon the main line will largely determine the wisdom of through or shuttle service. If the intervals of cars on the trunk route are sufficiently close to handle all the local traffic properly, the operation of through service on a branch line to the main line terminal may not be justified by the results. More cars will be required on account of the need of filling up a certain main line space with the cars which maintain the branch line headway, and if the length of the branch is only a few miles, one or two cars on the average can be utilized to handle all the traffic on a shuttle service, whereas if a through routing is adopted, perhaps two or three times the investment in rolling stock will have to be made in relation to the needs of the traffic on the branch line.

Aside from the investment in cars to maintain a through schedule, the cost of wages, power and maintenance will all be larger. It may pay even so to run the cars through to the terminal, for an irregular headway on the main line should not furnish ground for operating troubles, given a first-class dispatching system. The scheme of through routing will undoubtedly work best on a double-track line equipped with block signals, but in steam road practice irregular intervals are an almost hourly occurrence. If an interurban line operates cars as often as every half hour, there is no reason why the extra movements afforded by the through cars from a branch line should interfere in the slightest degree with the safe conduct of the main line traffic, and on shorter main line headways careful dispatching will take account of all unusual conditions.

The magnitude of business originating on the branch line and the size and character of the cars used there will influence the decision as to through or local service. There is little advantage in running through cars of inferior power and capacity on a main line where the traffic conditions call for the frequent use of the largest and fastest rolling stock. But if the branch line taps a territory rich in prospective through business it is well worth figuring what the comparative cost of running through and local cars will be in connection with the addition of such trackage to the system. It is almost impossible to tell what effect a through service will have on competition of other roads without trial, but there is nothing to prevent the trial of a partial through service at certain hours of the day for a time. While the number of cars needed to maintain a shuttle service on a branch line is small in most cases, it is almost always the fact that such cars spend a very large percentage of their time standing still at the ends of the branch, and if the line is only two or three miles long the platform labor will be worked somewhat inefficiently. There is liable to be a good deal of idle mileage in the course of a week, in taking the branch cars to and from the short line which they are serving. These considerations, and the flexibility of branch line schedules, render it highly advisable to make careful estimates of the relative costs of through and shuttle service in starting up a new branch route, and they emphasize the importance of analyzing operating costs from the earliest days when the branch is

opened to commercial service. No general solution of this problem is feasible, but a thorough study of the operating costs and probable revenues, backed up if need be by experimental temporary schedules, will lead to a satisfactory decision in specific cases.

The Settlement in Cleveland

An interesting article on the "Street Railway Settlement in Cleveland," written by Prof. E. W. Bemis, of the City Water Department, Cleveland, is published in the *Quarterly Journal of Economics* for August. The academic character of the publication in which this article appears makes it seem strange that the facts were not presented in such a way as to leave no opportunity for controversy. The objectionable aspects of the situation require analysis quite as much as those which are set forth by Professor Bemis, who errs, perhaps unconsciously, on the side of overzealousness rather than on that of conservatism.

Professor Bemis states in the opening paragraph of his article: "A new method of attacking a public utility in private hands has been successful and a new solution of the street car question has been placed on trial." It is true that a new method of attacking a public utility in private hands has been successful, but it is also true that the new method consists simply in the use of public office to effect transfer of control from certain private hands to other private hands. Professor Bemis draws attention to the lease of the property to a holding company, the stock of which should be owned "by a small body of trustees," and adds: "The stock was so tied up that no minority of the trustees could sell a controlling interest in the holding company." We presume that this statement is intended to refer to the stock of the Municipal Traction Company; if that presumption is correct, it appears that Professor Bemis is in ignorance of the fact that no trustees have been constituted to hold this stock. Many people have had the erroneous impression that such a trusteeship had been created, but the fact as disclosed by inquiry is that the control of the Cleveland street railway lies with the Municipal Traction Company, whose capital stock is only \$10,000, of which but \$1,000 has been paid in, and that no trust agreement has been made affecting this stock. The stock is the personal property of its holders, who also constitute the board of directors of the company.

We have no especial authority to answer the statement that it was necessary to meet the opposition of the bankers and brokers throughout the country in financing a competing 3-cent fare company, and that almost all the moneyed interests hoped for the failure of the experiment, but would not be surprised if capital had been difficult to secure. It does not appear to us it has been proved that a company can pay 6 per cent on its actual investment while charging this fare for a length of haul corresponding in any reasonable degree or with service equal to the facilities offered by transportation companies in the principal large cities.

The ownership or lack of ownership of securities by Mayor Johnson is not a matter of public concern, except as it may have a bearing on the situation. Professor Bemis states: "Mayor Johnson, who never owned any stock or bonds in the low-fare companies, guaranteed some of their

notes." This statement presumably applies to the original operating properties. The point of present importance, however, is not whether Mayor Johnson owned securities of the original low-fare companies, but what part of the \$10,000 capital stock of the Municipal Traction Company, of which he is a director, is owned by him, and to what extent, if any, he is a stockholder in the Cleveland Railway Company. Professor Bemis' article is incomplete in this respect.

In discussing the valuation of the property of the Cleveland Electric Railway, Professor Bemis refers to the city and the Cleveland Electric Railway as being the parties to the valuation, and says that the motive of the proceedings was that a holding company should operate the properties as much in the interest of the city as was practicable without actual municipal ownership. The impression which he intends to convey by this statement of motive is not clear. It cannot be assumed that the financial interests of the municipality are served by the new arrangement; the burden of taxation for the street railway system is made much lighter by the present ordinance than with the old measures under which the Cleveland Electric Railway operated. It does not seem exact, either, to consider the present arrangement a partial approach to municipal ownership; the only possible connection lies in the fact that the chief officers of the municipality are the leading stockholders of the corporation. The opportunity in dual relationship of this character could lead to grossest abuse of power in the hands of men who would seek their own personal profit. The statement of motive may mean that by operating the property in the interest of the city the company intended to furnish as desirable service as could be given consistent with a proper return on the investment. It appears to us that no tangible evidence exists to prove any facts other than that the property is owned as much at present by a private corporation as it ever was in other days, and that it is not operated now any more in the interest of the city than at other times.

Professor Bemis says that it is hoped later to add F. H. Goff to the board of directors of the Municipal Traction Company. Mr. Goff is a prominent citizen of Cleveland, who acted as arbitrator for the Cleveland Electric Railway in the valuation proceedings. We do not know the feeling of Mr. Goff concerning the suggestion that he be elected a director, but he has repeatedly indicated in public interviews his disapproval of the fact that no trust agreement has been executed by the directors and stockholders of the Municipal Traction Company looking to the control of the property in other interest than the private interest of the directors.

Professor Bemis states that the traction company, quite apart from the odium attaching to a betrayal of trust, would have no object in thwarting the ultimate contemplated plan for the sale of the property to the city. The decision of the traction company, of course, would be that of its stockholders and directors. Even if it be conceded that the present stockholders might be disposed to sell to the city, their heirs, or others who might acquire an interest later, might have other plans. A corporation cannot be bound by unwritten pledges of its shareholders.

THE OHIO VALLEY SCENIC ROUTE

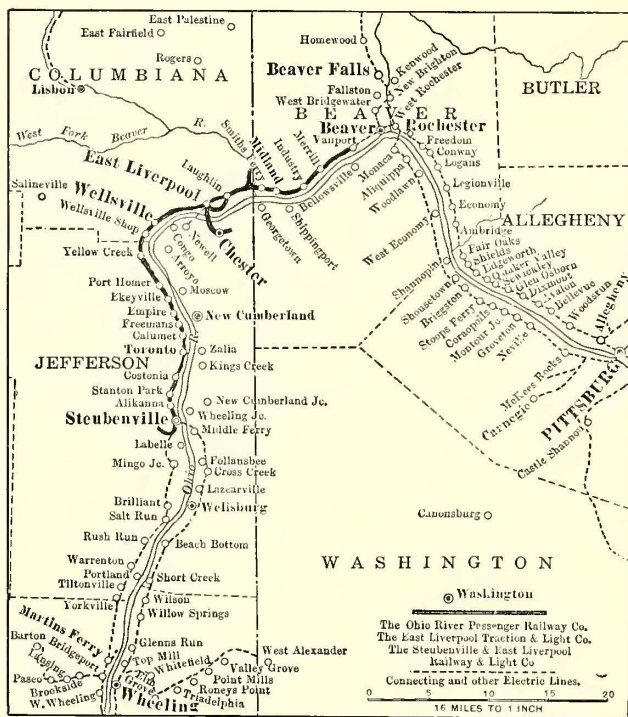
The lines comprising the Ohio Valley Scenic Route were opened for through service between Steubenville, Ohio, and Beaver and Rochester, Pa., on July 1 of this year. Operation was commenced between Steubenville and East Liverpool, Ohio, on Feb. 10 and a very satisfactory sched-

which are covered by the villages and the larger towns that have grown up as the result of the numerous industries established in this territory. At various points huge brick and tile factories, for which the region is noted, take up all available space with acres of their product stacked in novel array back to the hills.

For business reasons the lines between Steubenville and Beaver, Pa., were placed in the hands of three separate corporations for construction—the Steubenville & East Liverpool Railway & Light Company, the East Liverpool Traction & Light Company and the Ohio River Passenger Railway Company. The financial control of all three is in the hands of the Ohio Valley Finance Company, of which W. Caryl Ely, of Buffalo, is president. Of the operating companies Van Horn Ely is president; Edward McDonnell, secretary and treasurer, and J. C. Rothery, general manager.

THE EAST LIVERPOOL TRACTION & LIGHT COMPANY

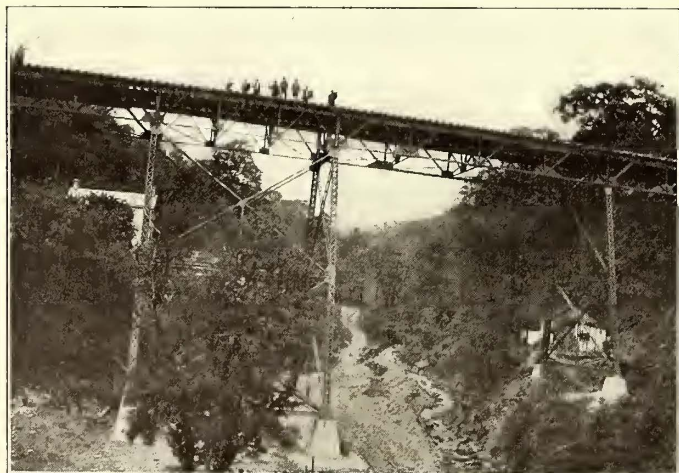
To unite the interests at East Liverpool and Wellsville, Ohio, and secure favorable conditions for construction and operation, the East Liverpool Traction & Light Company purchased the capital stock of the United Power Company, which owned the East Liverpool Railway Company, the Ceramic City Light Company and the Wellsville Electric Light Company. This gave the company control of the railway line between East Liverpool and Wellsville and the lighting interests in both places. To perfect transportation plans, however, several other companies were taken into the new corporation. One of these was the East Liverpool Bridge Company, which owned the steel suspension bridge over the Ohio River, 1711 ft. long and 24 ft. wide, connecting East Liverpool, Ohio, and Chester, W. Va., and accommodating a double-track street railway as well as other traffic. Other companies absorbed were the East Liverpool & Rock Springs Street Railway Company, whose route was partly over the tracks of the East Liverpool Railway Company and partly over its own lines, across the suspension bridge, through the City of Chester and terminating at Rock Springs Park,* and the Glasgow Railroad



Ohio Valley Scenic Route—Map

ule had been maintained pending the completion of the line between Midland and Beaver, Pa.

It is doubtful whether another electric railway of equal length in the country passes through a more picturesque section than the stretch along the Ohio River between Steubenville and Rochester. On both sides of the wide



Ohio Valley Scenic Route—Viaduct over Four-mile Creek, near Beaver, Pa.



Ohio Valley Scenic Route—Sewer Pipe Works on Line of Electric Railway

stream the precipitous and tree-covered hills come in close to the water's edge and in many places on the Ohio side barely enough space remains for the electric railway tracks and those of the Pennsylvania Railroad lines which thread their way around the points and along the banks for the entire distance. Occasionally the valley widens slightly, the hills giving way to small plots of level land

Company, organized under the laws of Pennsylvania, and the Eastern Ohio Railroad Company, an Ohio corporation, which had been formed to build a railway between East Liverpool and Lisbon, Columbiana County, Ohio. About 3 miles of track were built by them to reach the mine of the Island Run Coal Company, under the same control. The Chester

*See STREET RAILWAY JOURNAL for Sept. 1 and Sept. 15, 1906.

Light & Power Company was also purchased. This gave the new company control of all the railroad and lighting properties in and about the City of East Liverpool.

The new owners first gave their attention to the line between East Liverpool and Wellsville. This consisted of 17 miles of single track in poor condition and with several heavy grades, extending from the Ohio and Pennsylvania State line at East End to the southern boundary of the City of Wellsville. As this line gave promise of excellent business, the engineers deemed it best to eliminate a number of grade crossings at the intersection of the Pennsylvania Railroad tracks, get rid of several sharp curves and reduce the grades as far as possible. In accordance with the plans formulated when the properties were acquired, arrangements were at once completed for rebuilding the road and

"Diamond" or business center of East Liverpool to accommodate the laborers in the large potteries and people who reside in that district. This is now a branch line with sufficient cars in operation to take care of the business. The main line east was built over Pennsylvania Avenue with the idea of giving a better entrance to the East Liverpool-Rochester branch and at the same time serve the large number of people who have built homes on the higher ground east of the business portion of the city. Two other lines extend back in other directions and give service to the residence districts. This section of the road not only furnishes a link in the through route, but affords excellent local service as well.

STEUBENVILLE & EAST LIVERPOOL RAILWAY & LIGHT COMPANY
The Steubenville & East Liverpool Railway & Light



Ohio Valley Scenic Route—Steam, Electric and Wagon Bridges over Yellow Creek

double tracking it. This has all been done and the plans have been completely carried out. On the main line, outside the limits of municipalities, the track was laid with 85-lb. steel rails in 60-ft. lengths upon a substantially constructed roadbed, with 8 in. of broken stone ballast. In the paved streets 72-lb. girder rails are used. Since the narrow valley is an almost continuous town between East Liverpool and Wellsville, the road now serves a population of between 38,000 and 40,000 people. A 10-minute headway is maintained between the two cities to accommodate the increasing traffic. In effect, this is the same as a city service, as the cars are operated in the same way and a fare of 5 cents is charged.

When the property was taken over a short stretch of track extended up the river from what is known as the

Company, incorporated in 1906, purchased the property of the Steubenville Traction & Light Company, which owned and operated the street railway and electric light systems in Steubenville and a single-track interurban railway between Steubenville and Toronto, a distance of 10 miles. The company also purchased the plant of the Toronto Electric Light & Power Company in Toronto.

The first work of this company was the construction of a double-track high-speed road between Wellsville and Toronto, the latter being the northern terminus of the single-track road operated by the Steubenville Traction & Light Company. The distance is 7.65 miles and for the most part the route lies along the foot of the hills where construction and engineering work was somewhat difficult. The course is slightly southwest from Wellsville and

is crossed by many streams flowing to the river from various portions of eastern Ohio. In several places the space along the river is so narrow that the company was compelled to use the public highway. This is true of places where the wagon roads occupied excavations on the sides of the hills and at such points further excavations were necessary to secure space for both. The franchises secured from the county cover about one-half the length

of the two new companies, a third was organized to build a road from the Pennsylvania State line to Beaver and Rochester, Pa. It is known as the Ohio River Passenger Railway Company. This company completed its road on July 1. It extends from the eastern corporation limits of East Liverpool, through Smith's Ferry, Midland and Industry to Vanport, where it connects with the lines of the Beaver Valley Traction Company, over which the cars

operate to Beaver and Rochester. From this point Beaver Falls, New Brighton, Freedom, Ambridge and other points are reached over the connecting lines. Like the other portions of the route, this link passes through a very picturesque section of the country along the river. This is especially true of the few miles just east of East Liverpool. The franchises are perpetual under which about one-half the road is built; the remainder is on private right of way. There are several long tangents, while the curves are easy, and the grades, with the exception of one at East Liverpool, are comparatively light. This line will eventually form a connection with roads reaching Pittsburg.



Ohio Valley Scenic Route—Crossing over C. & R. Railroad at Port Homer

of the road; they are perpetual and in return for these rights the company has paved a space 14 ft. wide outside of its tracks in several places where it occupies the highways.

The remainder of the road is built on private right of way. So far as possible the tracks were laid through the numerous villages in a manner that will allow the greatest freedom in operation and at the same time afford the best service.

A second track between Steubenville and Toronto, paralleling the original single-track road and completing the double-track route between Steubenville and East Liverpool, is now in operation. The old track has also been greatly improved by reducing grades and curves at various places and shortening distances by relocating tracks. A heavy grade and short curve were both eliminated 2 miles north of Steubenville by making a cut on the hill and building a fill across the adjacent low land. The result is a much safer road and the running time of the cars has been materially shortened. A curve at the southern entrance to Toronto is also being removed, and this will add still further to the speed feature.

Entrance to Steubenville is made over the local system on the beautiful stretch along Stanton Boulevard, named for Lincoln's Secretary of War, Edwin M. Stanton, whose home was in this city.

Cars reach the station of the Pennsylvania and Wabash lines in the business section of the city, as well as the passenger depot and offices of the local and Wheeling Electric Railway lines. The local system reaches all the principal parts of the city and extends back on the hills to Pleasant Heights, La Belle View and other suburban places.

OHIO RIVER PASSENGER RAILWAY

With the properties already mentioned in the possession

ROADBED AND TRACK CONSTRUCTION

While these various sections of road have been treated so far under the heads of the companies which constructed them, they may be considered as a single route in what is said of their construction and operation, as the same policy has been followed throughout by the railway company.



Ohio Valley Scenic Route—Bridge over Little Beaver Creek, near East Liverpool, Ohio

In building the roadbed steam railroad standards were used for the entire line. Owing to the rugged nature of the country, engineering difficulties were found, but all were overcome. One of the most interesting features in this respect was the use of concrete walls to prevent landslides.

The track consists of 85-lb. T-rails in 60-ft. lengths, laid upon standard white oak ties, 6 in. x 8 in. x 8 ft., spaced

2 ft. centers. The roadbed is ballasted with 8 in. of crushed stone and gravel. Stone is found in large quantities in that section and gravel in the riverbed. Through paved streets 72-lb. girder rails are used. These standards are followed throughout, with the exception of the original track between Steubenville and Toronto, where the 70-lb. T-rails originally laid, have been used. The second track over this distance is one of the same construction as the remainder of the road.

GRADES AND CURVES

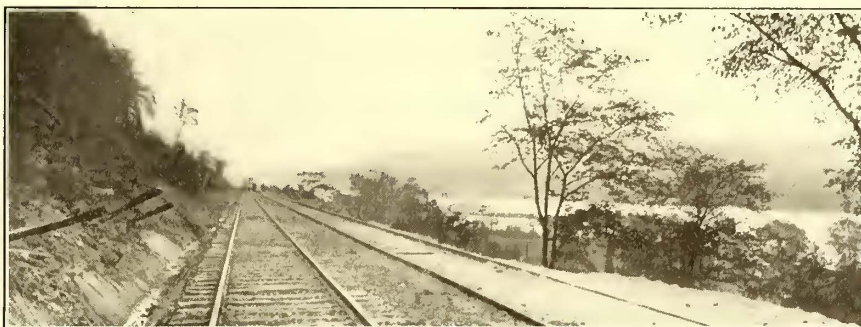
The heaviest grade on any of these lines is a short one of 7 per cent at Fifth Street, in East Liverpool, where the track has been constructed over a hill to the east of the city and where it was desirable to avoid a cut in front of a number of residences. Between Wellsville and Steubenville there is nothing over 4½ per cent, except at Stanton Park, where 7 per cent is reached. There is another 7 per cent grade at Smith's Ferry on the Ohio River Passenger Railway on the approach to one of the bridges. Curves have been eliminated on all the lines as far as possible.

BRIDGE AND VIADUCT CONSTRUCTION

Two large bridges and five viaducts were necessary in the construction of these lines because of the streams that flow into the river along the route and the necessity for crossing the steam railroad at several points. Grade crossings were avoided for the entire length of the lines, except at one point. The most pretentious of the two bridges spans Little Beaver Creek on the line of the Ohio River Passenger Railway Company, a short distance east of the State line. Its total length is 310 ft., with a single span of steel truss construction 155 ft. long, supported upon

sisting of earth fill in this case, is 3 per cent. In construction, this bridge is similar to that at Little Beaver Creek.

By far the longest trestle or viaduct serves as an overhead crossing of the Pennsylvania Railroad tracks at Port Homer on the line of the Steubenville & East Liverpool Railway & Light Company, about midway between Wellsville and Toronto. It has two steel spans 35 ft. and 60 ft.



Ohio Valley Scenic Route—Track Construction Along the River

long, respectively, while the approach consists partly of an earth fill and partly of steel frame trestle. From the south the approach is built on a curve, the grade being 5 per cent. Just north of Port Homer is another trestle 335 ft. long, with spans the same length of those just mentioned and a grade of 1 per cent at the approaches. The third trestle on this portion of the route is over Brimstone Run and consists of two spans 55 ft. and 60 ft. long, with approaches that bring the total length to 175 ft.

Barelay's Run and Four-Mile viaducts, each having a total length of 275 ft., with two spans 35-ft. and 50-ft.



Ohio Valley Scenic Route—View in Midland, Pa.



Ohio Valley Scenic Route—Fifth Street, East Liverpool, Ohio

abutments 34 ft. and 40 ft. high, respectively. Owing to the fact that the line at this point passes under the Pennsylvania Railroad, the approaches are level. The second bridge is over Little Yellow Creek, a few miles north of Wellsville on the line of the Steubenville & East Liverpool Railway & Light Company. Here the single span of steel truss is 170 ft. long, supported upon concrete abutments 32 ft. and 34 ft. high. The grade of the south approach, con-

lengths, respectively, are found between Midland and Beaver on the line of the Ohio River Passenger Railway Company. Undergrade crossings of the Pennsylvania tracks are at Yellow Creek and Beaver Creek, and one at the southern boundary line of Wellsville.

The concrete retaining walls, built to prevent landslides, deserve attention in this connection. In all there are four large walls aggregating 1375 ft. The most important of

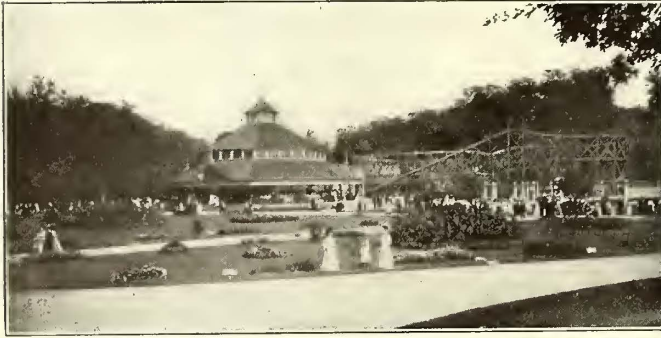
these, 425 ft. long and 35 ft. at its greatest height, is located at what is known as the Narrows, about 2 miles south of Wellsville. The Walker's Run walls are between East Liverpool and Wellsville and vary in height between 14 ft. and 28 ft. Their aggregate length is 550 ft. Still another wall, 400 ft. in length and 20 ft. at its greatest height, is at Cook's Ferry, about 1 mile east of Midland.

POWER TRANSMISSION

All the overhead construction is of the span type, the poles on the double lines being spaced 120 ft. on tangents

the arc generators for the city system, a condensing plant and cooling tower and two 500-hp Stirling water-tube boilers with Roney mechanical stokers have been added, giving the plant a total output of 1000 kw, d.c., and 1500 kw, a.c. Two 175-kw and two 100-kw Westinghouse 60-cycle, oil-insulated, self-cooling transformers have been installed for raising the tension from 2200 volts two-phase at the generator to 13,200 volts three-phase for transmission.

Two units similar to those at Steubenville, one 1000 kw



Ohio Valley Scenic Route—Roller Coaster in Rock Springs Park



Ohio Valley Scenic Route—Suspension Bridge between East Liverpool, Ohio, and Chester, W. Va.

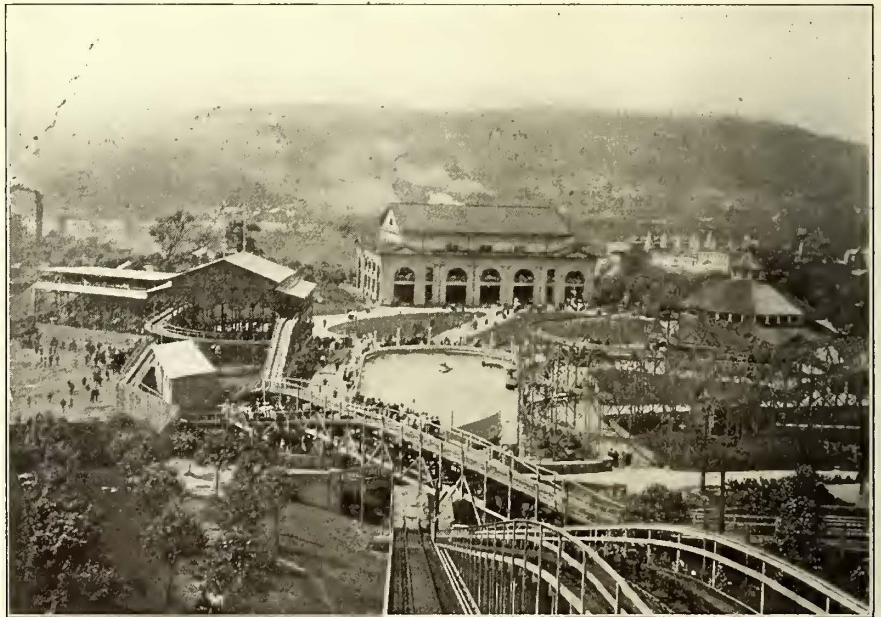
and from 70 ft. to 80 ft. on curves. They are set at an angle of 18-in. rake for a 30-ft. pole. The span poles are 30 ft. to 35 ft. long and are set 5 ft. in the ground, while those carrying the transmission lines are from 40 ft. to 45 ft., with 7 ft. in the ground. The trolley wire is No. 0 and No. 00 hard drawn copper, suspended from the span wires by the Ohio Brass Company's hangers and soldered clips.

Two 13,200-volt circuits transmit the current to the substation at Toronto from the Steubenville power station, one supplying the railway rotaries and the other furnishing energy for incandescent and street lighting. This substation serves the section of railway between Costonia on the south and Yellow Creek to the north of Toronto. The two circuits from the East Liverpool power station to the Wellsville substation carry 6600 volts each, the lower tension being chosen because of the densely populated territory through which the lines pass, as well as other local conditions which make this advisable. The higher tension is used again between East Liverpool and the substation at Industry on the Ohio River Passenger Railway. From this it will be seen that the two power houses, one at Steubenville and the other at East Liverpool, furnish current to operate the lines of the three companies.

POWER HOUSES AND EQUIPMENT

The equipment of the power houses at Steubenville and East Liverpool has been greatly strengthened by additions to meet the needs of increased mileage and to take care of such future construction as may be done within the next few years. At Steubenville, two 500-kw Westinghouse-Parsons turbo-generators, induction motors for operating

and the other 500 kw, have been added to the equipment of the East Liverpool plant, together with a 350-kw, direct-connected railway generator, a 300-kw rotary and four 500-hp Stirling water-tube boilers with complete condensing plant, giving a total of 1100 kw d.c. and 2000 kw a.c., with 4000-hp boiler capacity. Six Westinghouse oil-insu-



Ohio Valley Scenic Route—Birdseye View of Rock Springs Park

lated, self-cooling transformers serve to raise the potential from 2200 volts to 6600 volts and 13,200 volts, the tension at which it is fed into the substations at Wellsville and Industry, respectively. A feature of these plants is that the current is generated two-phase, stepped up three-phase for transmission and then stepped down to two-phase again for use on the lighting circuits.

SUBSTATIONS AT TORONTO AND WELLSVILLE

The lighting plants at Toronto and Wellsville have been

abandoned and transformed into substations for both railway and lighting purposes. The equipment of the two are similar and include Westinghouse rotaries and transformers.

OPERATION OF TRAINS

The line is about 44 miles long. Early in the morning and late in the evening cars are operated hourly, but during the remainder of the day 30-minute headway is maintained. The length of the line between the center of Steubenville and Rochester is divided into sections as fol-

industries and without doubt will foster excellent railway business for them.

ELECTRIC RAILWAY CONNECTIONS

At Steubenville track connections have been made with the Tri-State Railway Company, whose lines connect at Wellsburg with those of the Wheeling Traction Company for Wheeling, W. Va., 21 miles south. Other towns and cities reached through this connection are: Follansbee, Lazearville, Short Creek, Bridgeport, Bellaire, Martins Ferry, Benwood, McMechen, Moundsville, Mingo and Brilliant. At the north the Beaver Valley Traction Company's lines, owned by the Pittsburg Railways Company, reach Beaver Falls, New Brighton, Monaca, Freedom, Conway, Ambridge and Leetsdale. As soon as arrangements are made for a right of way through Sewickley, Pa., the Pittsburg Railways Company will probably complete its lines down the river to connect with the Beaver road. The completion of the Youngstown & Ohio River Railway to East Liverpool will furnish another connection that will open traction travel to all northern and eastern Ohio and to portions of Indiana and Michigan.

In addition, the schedules have been so arranged as to make the connections with the steam railroad trains at the various points touched.

PARKS AND RESORTS

Two beautiful resorts are owned by the company. Stanton Park, 2½ miles from Market Street, Steubenville, lies in a valley between two high hills and contains 82 acres of land of great natural beauty. A casino, dancing hall, figure 8 and a number of other amusements have been provided here and the park is well patronized all through the summer months. This park is under the direct control of the company, but a number of the amusements and rights are leased to others to be operated under rules and restrictions that will always keep them within the limits prescribed by the management.

Rock Springs Park at Chester, W. Va., just across the river from East Liverpool, was described in the issue of the STREET RAILWAY JOURNAL to which reference has already been made.

ELECTRIFICATION OF STEAM RAILROADS IN MELBOURNE, AUSTRALIA.

J. A. Boyd, member of the Victorian Government, who has been inspecting the electrified steam railways in England with a view to the adoption of electric traction on the Melbourne Suburban Railways, has sailed from London for Australia via New York. Mr. Boyd says that the report which Charles H. Merz, consulting electrical engineer of the Victorian State Railways, has been preparing during the last 12 months is now completed, and will shortly be presented to the Victorian Railway Commissioners. Mr. Boyd understands that the present proposal is of a much more extensive character than has been generally anticipated, and that it will include the conversion to electrical traction of some 40 miles of track. A year ago when Mr. Thomas Tait, chief railway commissioner of Victoria, drew up a report on the proposed electrification scheme, it was recommended that a start should be made by electrifying the Port Melbourne and St. Kilda lines, which together cover only 5¾ miles. Mr. Boyd is of the opinion that to electrify these lines alone would not be warranted financially, and he believes that Mr. Merz will include in his report the additional lines of Essendon and Brighton as the first instalment.



Ohio Valley Scenic Route—Scenic Railway Building in Rock Springs Park

lows: Steubenville and Toronto, 8 miles; through the City of Toronto, 2 miles; Toronto and Wellsville, 8 miles; Wellsville and East Liverpool, 11 miles, and East Liverpool to Rochester, 16 miles. The running time over the entire line is 2 hours and 35 minutes. Because of the density of the population a headway of 10 minutes is maintained between East Liverpool and Wellsville. The entire route is double-track; no dispatching system is used as present, al-



Ohio Valley Scenic Route—Interurban Car in Service

though it may become necessary if a freight and express service is taken up extensively.

CITIES AND TOWNS

It is estimated that the combined population of East Liverpool, Wellsville, Chester, W. Va., and contiguous towns and villages is 45,000, while the district about Beaver and Rochester has the same number of people. Steubenville and surrounding territory contains about 42,000 people and Toronto, with neighboring towns and villages, 20,000. The entire Ohio Valley traversed by these lines is a hive of

THE PASSENGER DEPARTMENT OF THE BOSTON & NORTHERN AND THE OLD COLONY STREET RAILWAY COMPANIES

The largest electric railway trackage in New England under a single management is that of the Boston & Northern and the Old Colony Street Railway Companies. The former company owned 479 and the latter 377 miles of track at the close of the last fiscal year, and the service was rendered in the three States of Massachusetts, New Hampshire and Rhode Island. In the year ending Sept. 30, 1907, the Boston & Northern system carried about 93,000,000 passengers, ran about 17,700,000 car miles, and owned about 1200 passenger cars. The Old Colony Street Railway Company carried about 55,700,000 passengers, ran about 10,300,000 car miles, and owned 745 cars. The territory served by these two companies includes some of the most interesting historical localities in the United States, and is famed from one end of the country to the other as a vacation section. The routine service of each company

organization was accordingly created and installed in this location, and so well chosen was the site that in the expansion of business which the department has since experienced it has not been necessary to move to other quarters. The present quarters are somewhat taxed for space, but the general location leaves little to be desired. The work of this department might be summed up in the single phrase that its object is to create trolley travel, but the scope of the department is so broad, and it is such a prominent factor in the furnishing of trolley information and promoting trolley travel in eastern New England, that its methods are worthy of description.

ARRANGEMENT OF OFFICE

The office was opened for business in October, 1904. At present it has a staff of four employees. It occupies a front room one flight above the street level, with elevator service, nearly at the head of Milk Street, on Washington, directly opposite the historic Old South Church. It is open in the summer season from 8 a. m. to 5:30 or 6 p. m., on all days except Sunday, and in the winter season from 8:30 to 5. The busier months are May, June, July, August, September and October. Views of the office interior are reproduced herewith. The office is about 35 ft. long by 17 ft. wide, and it is divided into two sections, one for the use of the public and the other for the staff of the department. All information is furnished to the public free of charge, with the exception of the *Trolley Wayfinder* and *Wayfinder Bird's-eye Map*, published and sold by the New England Street Railway Club, and the *Boston Elevated Map*, published and sold by that company.

The public enters the office directly at the head of the elevator shaft, the entrance being so located that passengers in the elevator of the building catch a glimpse of the inside of the office as they pass the first floor above the street level. Directly opposite the door inside the office is an inquiry counter with double gates, where all applications for information are made. This counter is about 30 in. wide and stands 36 in. high above the floor, and it



Traffic Promotion in Boston—Interior of Office

is focused upon metropolitan Boston as a center, while the pleasure travel reaches the ocean resorts, rural communities and upland districts of all the territory served. Eastern Massachusetts is probably more thickly gridironed with trolley lines than any other equal area in the world, and on the north and south sides of Boston, extending to Nashua, New Hampshire, on the one hand and to Newport, R. I., on the other, the service of the Boston & Northern and Old Colony companies is everywhere in evidence.

About four years ago it became apparent to the management of the combined organizations that there was a field for traffic promotion in this territory which would well bear cultivating. The possibilities for creating travel of both local and through character in regular and special cars were seen to be very promising. It was decided to establish a regular passenger department at 309 Washington Street, Boston, in the heart of the business district and centrally located with respect to the railroad and steamship ticket offices, the large retail establishments and the newspaper headquarters and railroad terminal stations. An

extends around the room for a distance of about 20 ft. It is surmounted by a grille work fence 40 in. high, and in one corner is a ticket cabinet, 21 in. by 37 in. by 11 in. in dimensions. The department sells a large number of tickets to points both on and outside of the two systems. Outside the information counter is located a folder rack maintained by the New England Street Railway Club, which has this year furnished the services of one man to the work of the office, in addition to the force employed by the Boston & Northern and the Old Colony companies. Seats are provided for the convenience of the public, with free drinking water and table facilities. A private office is provided for the passenger agent, and the clerks of the staff are located in the general office, where they can promptly answer inquiries. The main office is lighted by three 32-cp and seven 16-cp incandescent lamps. Two telephones are provided, with an additional one used by the New England Street Railway Club during the busier season. There are three large windows on the Washington Street side, which take up practically the entire frontage of the office. These are

labeled with points of interest reached by the lines of each company, and the purpose of the office is also emphasized on the advertising upon them. In the office are kept every electric railway guide book, time table, folder and circular that the department has been able to secure, with a vast amount of other information regarding steamship and railroad service, parks, coming events of interest, clippings and photographs. The walls of the office are well covered with artistic photographs of historic houses, bridges, parks, lakes, ocean views, woodland scenes, country roadways, upland sights and famous places associated with the early days of the country, particularly in Revolutionary times, on the lines of the Boston & Northern and the Old Colony systems. Besides these the department keeps illustrated books of photographs showing parks on the two systems, the development of electric express service in its territory, and other features of interest.

REPLIES TO INQUIRIES

The policy of the department is, of course, to create trolley travel first, last and all the time, but in endeavoring to do this it strives to answer all legitimate inquiries that come to its attention. No information is withheld from the narrow spirit that possibly it will enable some one to patronize some other means of transportation, but every effort is made to supply the facts wanted. In some cases this liberal policy has no doubt been sorely abused by the public, but in the long run experience has shown that open, fair treatment pays the best. No matter what may be the errand of a visitor to the department, if he comes once it is probable that he will come again, and the furnishing of the necessary information at one time on a subject more or less foreign to trolley travel may be the means of later patronage of the most desirable kind.

From 25 to 150 letters of inquiry are received each day by the department during the busier season, and it is roughly estimated that from 200 to 600 personal visits of inquiry are made at the office daily. The telephone inquiries are fully, if not more numerous. Letters of inquiry regarding trolley travel are received from all over the United States and Canada, from England, Mexico, Germany, Jamaica, Cuba, and many other points. The department has a mailing list of about 7000 names, drawn from all over the country, of persons genuinely interested in trolley riding. All letters of inquiry are answered as soon as possible, generally by the day after the arrival at the latest, depending upon the amount of research and the actual clerical labor required to furnish the information. Requests to furnish complete itineraries form a considerable portion of the mail received, and these are sometimes extremely complex in the character of routes desired. One inquiry asked for the detailed costs, changes, times of running and connections, with suitable stop-over points between Pittsburg, Pa., and Plymouth, Mass., by trolley. Frequently letters of inquiry are received regarding the trip by trolley from Atlantic City, N. J., to New England, even as far as Bath and Brunswick, Maine. The heaviest inquiry mail usually is received

on Mondays, and this is partly attributed to the advertising which the department conducts in the Sunday newspapers, including write-ups of interesting changes in the territory, parks, equipment and policies.

ADVERTISING AND PUBLICATIONS

The passive work of answering inquiries is but a small part of the work of the department. The originating of advertising campaigns of various kinds, the conduct of routine advertising in the daily press, and the stimulation of traffic by personal letters and other matter of printed character occupy a large share of the attention of the passenger agent and his assistants. Advertising in the cars of the two companies and on the cars or premises of other companies is handled through this office, together with a large amount of special car renting, park promotion and other miscellaneous duties, bearing more or less directly upon the transportation end of the work. It is estimated that about 200,000 of the companies' principal folders have thus far been sent out by the office. Excursion traffic is largely originated by the work of the passenger department.



Traffic Promotion in Boston—Interior of Office

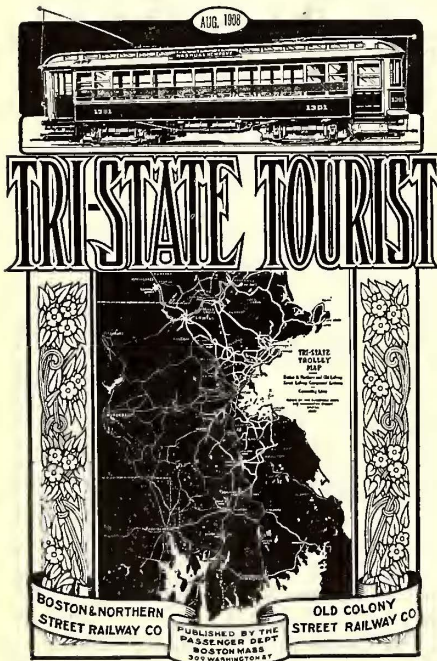
and in each season of the year the "trolley habit" is encouraged with special reference to the local conditions and attractions.

THE TRI-STATE TOURIST

Since February, 1906, the department has published a magazine called the *Tri-State Tourist*. This is printed on first-class paper and illustrated with genuinely artistic photographs, taken in most cases by the department itself. The *Tourist* has now a circulation of about 40,000 copies, published about the middle of the month. It is a 6 by 10-in. booklet, with 12 pages of reading matter. No advertising of any outside parties is admitted, and all matter is in the form of reading. It is the policy of this magazine to promote trolley travel and foster good feeling between the public, the two companies and the employees of the latter. About 1000 copies of the *Tri-State Tourist* are mailed to a selected list, the rest being distributed free on the cars and in the waiting rooms of the two companies. The edition is usually exhausted inside of a few days. Many public

libraries on the two systems have asked for copies and back numbers in regular order of publication, and keep them on regular file, and outside New England there is a mailing list which includes the Pratt Institute Library, in Brooklyn, and recipients in England and France, as well as many persons in all parts of this country. In many Y. M. C. A. rooms on the systems the magazine is regularly received and bound with other periodicals. The *Tourist* is devoted to notes upon the advantages of trolley travel in both light and serious vein, illustrated descriptions of trips and points of interest on both systems, brief illustrated biographies of employees who have rendered long and faithful service to their company, and discussions of the methods of street railway practice in a popular way, with short articles from time to time upon fares, service difficulties, and the availability of the department for information. One of the most telling articles in the *Tourist* described the way in which a division superintendent and his men fight snow, and another was a contribution from a prominent Boston physician pointing out the value of trolley riding as a means of health. A number of prize articles have also been pub-

and time-table information, the department prepares a large amount of publicity and paid advertising matter for some 150 newspapers and other publications on the sixteen divisions of the two companies. These include all manner of announcements, and descriptions of new lines, power station changes and equipment explanations in a popular vein; matter pertaining to parks, announcements of plans for handling traffic, intentions regarding the establishment of trolley express service, and other subjects of popular interest. In connection with the express service that has been operated on the Old Colony system for some time, articles were also published in the *Tri-State Tourist* to show the public its advantages, and that there was really nothing to fear from the company's policy in this respect. The advertising of the express department is partially handled through the office of the passenger agent. A prominent feature of the newspaper work is the announcement of special attractions at the parks, such as children's days, flag days, ticket hunts and harvest hunts. Every form of newspaper publicity which tends to increase travel is within the scope of the department, and in all cases where it is con-



Cover of Tri-State Tourist

TRI-STATE TOURIST.

Praise Fall River and Providence Trip.

People who take this Beautiful Ride Furnish the Best Advertisement of all of this Special Service.

"CAN you tell me about that special trip to Providence?" asked an inquirer in the Free Trolley Information Bureau of the Passenger Department the other day. "I beg your pardon for interrupting," broke in another visitor, before the clerk had an opportunity to answer the question, "but I fear that I must tell you that it is the best trip you ever saw. I went down the other day and had the finest trolley trip I ever had in my life. I don't know when I ever enjoyed any trip so much. I am just going to buy four tickets for my wife and children and myself and we are going to take it again this afternoon. That's what I know about it."

The gentleman who interrupted, needless to say, was fully pardoned for his interruption. His statement, however, is not at all uncommon. The same sentiment in substance is expressed many times a day. It doesn't need a lot of recommendation from the Passenger Department to tell tickets for that trip. The best advertisement that the service has is from the people who have tried it. For the benefit of those who have not it might be well to say that this special car, or more, as is frequently necessary, leaves Post Office Square daily at 2.30 p. m., except Sundays, and goes straight through without stops or changes, with no taking on or leaving of passengers from Boston to Providence, where it goes near the steamboat docks and arrives in plenty of time for people desiring to take the night boats for New York. Those desiring to go to Fall River may take the same car and make one change at Taunton. The trip costs but seventy five cents one way. The scenery is beautiful and the trip a fine one.

Returning the car leaves Market Square, Providence, at 8 a. m., goes along near the boat docks where it picks up passengers from the boats and then speeds on to Boston, where it arrives at about 11 a. m. Passengers

from Fall River may take cars leaving City Hall Square at 7.30 and connect at Taunton for this Special.

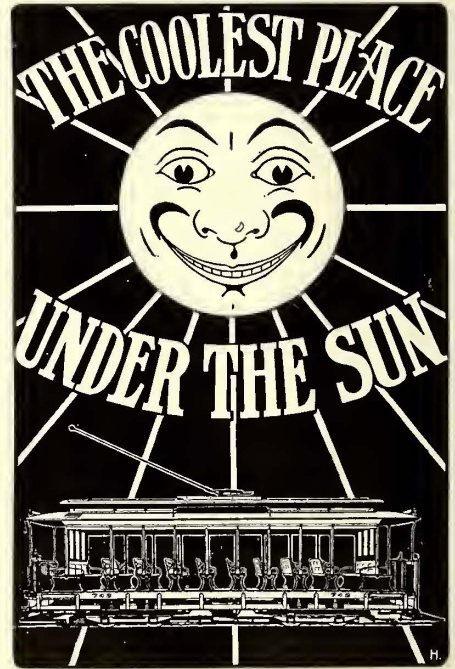
This service makes the cheapest and most delightful of all ways of travel between Boston and New York, or for local travel between Boston and Providence or Fall River.

TROLLEY EXPRESS HELP

TO SMALL SHIPPERS. Since the establishment of the trolley express service on the lines of the middle and southern part of the Old Colony Street Railway Company system, the big shippers have shown a quick inclination to avail themselves of the many advantages which it offers. From the start they welcomed it and after giving it a good reasonable try-out have gradually turned more and more of their business toward it, until many of the biggest manufacturing and mercantile establishments of the section through which it operates are using it to the practical exclusion of all other methods of express transportation so far as its district of operations extends.

The smaller shippers have also used it to a certain extent, but many have not yet come to realize what it may mean to them. The small retailer in any line of business, the individual who is merely shipping a small package to some other individual, any and all, no matter how large or how small their shipment, will find that its facilities are for their advantage as well as the big fellows. For the quick shipment of small articles from the smaller towns or cities in the district to the others, from the retailer to his customer, or from the wholesaler to the retailer, of a rush order or anything that needs to be shipped in a hurry, in absolute good condition and with a minimum loss of time or by deterioration, or chance of going astray it is ideal. Those living in the district where this service operates, whether the consignee or consignee, should give it a trial and insist upon it.

Sample Page of Tri-State Tourist



Typical Dash Sign

lished in competitions for the best story about any trip on either of the two systems. At the time when the six-cent fare problem came first to the front in Massachusetts the magazine gave some space to the matter with the object of making it clear to the public why a company can provide some services at a cost of five cents to the passenger, while others must be at a greater cost. The *Tourist* constantly emphasizes the attractiveness of trolley over steam railroad service, as is shown in the following note from a recent number: "Steam railroad fare, \$1. Doctor's bill for removing cinder from left eye, \$1.50. Total, \$2.50. Trolley fare, 75 cents. No cinders; no doctor's bill. That's all."

Another subject that the *Tourist* has taken up to some degree lately is the accident question. It has published a number of very readable articles on how to avoid accidents, with cautionary advice, particularly in the matter of boarding and alighting from moving cars, and of sitting still when a fuse blows.

OTHER ADVERTISING

In addition to the *Tourist* and the folders giving maps

sistent mention is made of the facilities at the passenger agent's office for the supplying of information.

SPECIAL EXCURSIONS SOLICITED

Whenever it is known by the department that any party, lodge, society, club, or convention is planning to take a trip in the territory or to meet in Boston or vicinity, a letter is at once written to the secretary of the organization calling his attention to the special car service of the two companies. Descriptive folders are also sent. The letters are usually of a personal character, varied to fit different cases. Two examples are given below, one having been sent to a woman's convention secretary and the other to a professional organization. The different character of the prospective business required certain differences in handling the matter, as will be seen.

March 26, 1908.

DEAR MADAM:—I am informed that you are at the head of a committee in charge of the arrangements for the gathering of clubs in this city in June.

It occurred to me that in making up your plans for the entertainment of visitors you might desire to include some

trips to the various historical points or seashore resorts of eastern Massachusetts, a large proportion of which are upon our lines. In making these trips it would be advisable and add much to the pleasure if they were made by special cars. We can make arrangements to furnish special cars from any point in Boston to practically any point outside, at a very reasonable figure. These cars could leave at any time and return at any time, and arrangements could be made to make such stops as might be desirable. In this way strangers in the district would be able to avoid all bother of time tables and making connections and could make the trips in congenial parties. I should be very glad to make up a number of trips in the way of suggestions, with the cost of the same.

If it would be possible to do so, I would appreciate it very much as a favor if I could secure from you a list of clubs which are to be represented. We issue maps and other literature containing information about our lines which I should be very glad to send to some of those who are to visit here in June, and which I think would be of a great deal of interest and value to them. I could also provide you, or such committee as might have the matter in charge, with various literature of this kind for your headquarters in Boston.

Thanking you in advance for such information, I am, etc.
Typical letter to professional organization:

July 18, 1908.

DEAR SIR:—I understand that your association is to convene in this city from July 28 to 31 inclusive. Permit me to call your attention to the fact that, should any of your members care to visit any of the famous inland, shore resorts or historical places in eastern Massachusetts during their stay here, we would be very glad to make arrangements at a very reasonable rate to provide you with special trolley cars for such trips.

If there is nothing which you have in mind in this line that you could arrange in advance, upon a few hours' notice, after arrival here, we could look out for you.

Whether you see fit to charter special cars or not, I wish to extend to the members of your organization the privileges of this office, and ask you to feel free with other members of the association to call upon us at any time for trolley or any other information which might be desired. We will do what we can to give it, help the members plan individual trips, offer the use of a telephone service, and in general try to make their stay here as pleasant as possible.

Yours, etc.

The department has the services of two press-clipping bureaus and receives all exchanges at its office. The spe-

requesting a chance to figure on trips. In the summer season numerous long-distance excursions are run from the inland cities and towns to the shore resorts and from the shore towns to the hill country. The longest excursions so far run have been from Lowell, Lawrence and Haverhill to New York via Fall River boats. The department considers it good advertising even in cases where




Traffic Promotion in Boston—Typical Dash Sign

the immediate profit is small. A number of excursions have been run from Lowell, Lawrence and Salem, Haverhill, Malden, Melrose and Lynn to Mt. Uncanoonuc, in New Hampshire. The Boston & Northern in such cases has done all the advertising and run the special cars, one pilot being required from each of the local companies. A good deal has also been done to stimulate traffic during the fall and winter season by encouraging nutting parties, skating outings, photographic work in snow scenery, etc.


ADVERTISEMENTS OF LONG TRIPS

The department spends considerable time each year upon the advertising of long trolley trips, perhaps the most important one of this kind being the combined trolley and boat trip to New York via Providence or Fall River. The methods used in advertising this line are representative. The trip is made by one through car each way daily, except Sundays, leaving Post Office Square, Boston, at 2:30 p. m.



Pilgrim John and his hardy four
Bethought, mayhap, they might see more
If for one day they'd do without
Their **SPECIAL CAR** and walk about.
But slopping home in April's wet
Their souls were rent with vain regret.
"Bestew me eyes," John wrathful spake.
"Ne'er more our **SPECIAL CAR** we'll shake."

**ORDER A SPECIAL CAR AT THE NEAREST OFFICE OF THE
Boston & Northern Street Railway Co.**



Traffic Promotion in Boston—Colored Rack Advertisement

cial-car business done in the office during the last two weeks of last June was more than the total amount for the first year that the office was opened. Every spring and fall the office writes to the church and Sunday-school superintendents, high-school principals and other officials at the heads of suitable institutions calling attention to the possibilities of trolley travel, particularly by special cars, and


and arriving in Providence in time for the night boats for New York. Passengers who desire to go via Fall River, change at Taunton. The return trip car leaves Providence at 8 a. m., arriving in Boston at 11. The cost of this trip is 75 cents each way, and the distance from Boston to Providence about 52½ miles. This trip is advertised on the dashers of all cars on ten divisions in the vicinity of

Boston, and also on cards hung in frames carried in the center of the interiors. Full sheet posters are displayed at all elevated stations in Boston, and the trip is advertised daily in the Boston newspapers. In addition, an advertising wagon with the facts of the trip printed upon it is run all around the city daily. In New York the trip was advertised for a time by sandwich men, who haunt the regions of the ticket offices and wharves, bearing placards advising the purchase of boat tickets to Providence or Fall River only. The Providence daily papers also advertise the trip.

"Dodge the Cinders!! The Next Time Use the Special Trolley between Boston and Providence. 75 Cents."

ADVERTISING SIGNS

Two prominent examples of trolley advertising may be cited in the case of the recent colored dasher signs and the famous "Pilgrim John Series" originated by the department. The dasher signs were used during the summer on all the cars of the two companies. One illustrates a prescription as shown in black and white on page 663, signed by the division superintendent upon whose territory the car is run, and the other represents the trolley car as "The coolest place under the Sun." The full-sized signs are about 14 in. by 21 in., colored. The "Pilgrim John Series" consisted of a half-dozen display cards brought out one by one to advertise special cars, the verses being composed by the company's "poet." All the cars of the two systems were provided with cards giving the adventures of "Pilgrim John" and his Pilgrim friends upon a supposed re-



Pilgrim John and his Pilgrim band
 Came back to see this glorious land
 "Gadzooks," quoth he, "What can we see
 "If we have to hoof it o'er the sea?
 "We'll have to try, as I surmised.
 "The SPECIAL CARS now advertised"
 "They hired a car, sped swiftly on.
 "Forsooth, it's great," saith Pilgrim John
 Pilgrim John Series 1

John Was Wise

IT didn't take him long to grasp modern improvements and appreciate the best of all up-to-date ways for a party to travel.

DON'T LET HIM HAVE ALL THE FUN

Try a special car. We can arrange to take you to any place connected by trolleys and bring you back at any time you wish, at a very reasonable cost.

Call, phone or write the office of the OLD COLONY STREET RY. CO., for rates and particulars when you have another trip in mind.

Division Superintendent.



Pilgrim John and His Pilgrim knights
 Filled up their days with seeing sights.
 When night came on with lights ablaze
 To "go to lodge," they felt the craze.
 "Zounds, Beds," quoth John, "We'll spend an hour
 "A-calling on the lodge Mayflower.
 "By SPECIAL CAR both ways we'll speed.
 "This sure right well meets every need."
 Pilgrim John Series 3

FOR LODGE VISITS


JOHN found SPECIAL CARS filled every need. It's just the same if a party is going to a neighboring union, church, society, dance or other entertainment affair, sight-seeing or picnic.

THERE ARE NO OUTSIDERS

To restrain discussion of secret rituals, or dampen your fun. No bother of time tables. No hustle to catch the last car. No waiting to make a lot of connections.

Don't fail before your next trip to get rates and particulars from the office of the BOSTON & NORTHERN STREET RY. CO.

Division Superintendent



When Pilgrim John and his merry blades
 Returned at last to the land of shades,
 John told at length of his trip on earth.
 Of SPECIAL CARS and their marvellous worth.
 Napoleon, Caesar, Kidd and Noah
 Listened enrapt and begged for more.
 "SPECIAL CARS?" quoth John. "I've done
 my best.
 "Just try them once, they'll do the rest."
 Pilgrim John Series 6

They Speak For Themselves

PILGRIM JOHN in the old days was never at a loss for words to praise others. Now, however, when telling of the merits of SPECIAL CARS his words fail.

SPECIAL CARS HAVE SO MANY GOOD FEATURES

That to do them all justice it was too much. It is the same with us. We have tried to tell of some of their varied uses, but with John we must say:

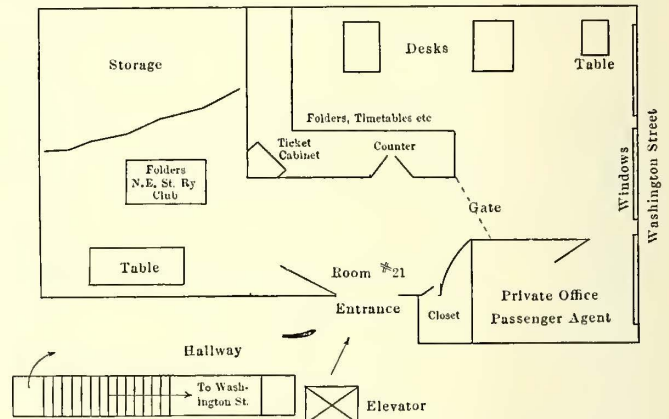
"JUST TRY THEM ONCE, THEY'LL DO THE REST."

Get rates and particulars of this service by mail, phone or by calling at the BOSTON & NORTHERN STREET RY. CO. office.

Division Superintendent

Traffic Promotion in Boston—Mailing Cards Descriptive of Pilgrim John's Adventures

with signs about the city; and near the boat landing is a sign 31 ft. long and 3.5 ft. wide, which calls attention to the through trip to Boston by trolley and telling where the car may be taken. An advertising wagon is also used in Providence. In Fall River the papers, wagon advertisement, signs and car dashers are used. Pictures of the car, with reading notices, have been placed in the daily newspapers of Boston, Providence and Fall River. On certain billboards beside the competing steam railroad route the following inscription has been placed in 12-sheet stands:



Traffic Promotion in Boston—Diagram Showing Arrangement of Washington Street Office

turn to earth, and the transportation in all cases was furnished by special cars to their delight. Smaller mailing cards, giving the Pilgrim John adventures in miniature, were also issued and sent to the officials of lodges, churches and other organizations in a follow-up series. Three of them are reproduced on this page; they are 3½ in. x 5½ in. and they made a distinct hit with the public.

MANAGEMENT

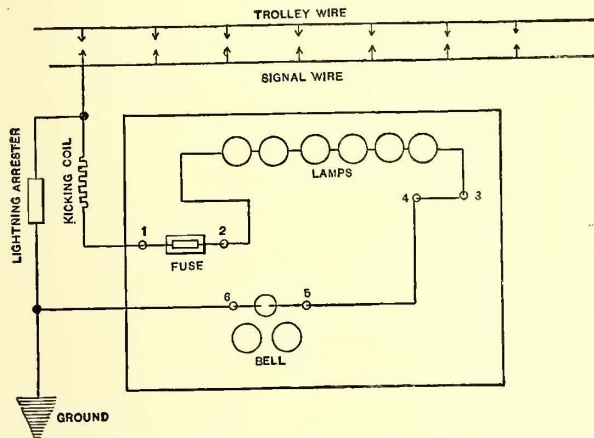
The passenger department is in charge of H. A. Faulkner, who has been at its head since February, 1906. For 12 years previous Mr. Faulkner was in newspaper work.

The Public Service Commission of the Second District of New York has issued a circular to all railroad corporations, asking them to submit as soon as possible proposed changes in schedules of passenger trains now in force discontinuing service which has been given on the summer schedule; also any service given by fall or winter schedules of 1907 which it is intended to discontinue during the coming fall and winter, and the reasons relied on to justify the action in each case. The circular calls attention to the custom of nearly all railroads to provide additions to their passenger service from June 1 to Oct. 1, and as a result complaints alleging poor and insufficient passenger accommodations are reduced to a minimum. At the end of the summer season the decrease in passenger travel justifies a large withdrawal of these extraordinary facilities and ordinarily following such action the number of complaints is very great.

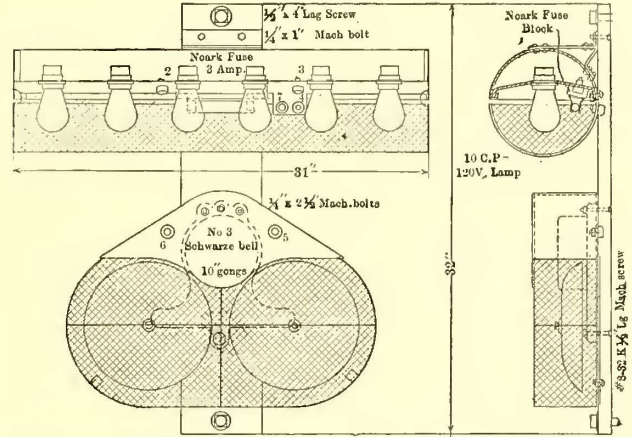
CROSSING SIGNAL OF THE TWIN CITY RAPID TRANSIT COMPANY

The engineering department of the Twin City Rapid Transit Company has designed and erected a new type of crossing signal which is giving excellent service. The signaling is done by means of a Schwarze 10-in. gong and six 10-cp lamps mounted on a pole at the intersection of the highway and railway line. Accompanying engravings show the wiring diagram of the signal circuits and other

thoroughly boiled in paraffin. Trolley cars are fastened to the ends of this stick. The wood supporting the trolley ears is hung from the span wire by means of two phosphor bronze springs which are assembled under tension and which, when a trolley wire is lifted by the passing under of a trolley pole and wheel, permit of contact points fastened on the hanger stick to rise and make connection with brass contact plates connected with the trolley hangers. The contact points are connected with the signal wire earlier described as extending along the pole line approach-



Twin City Crossing Signal—Wiring Diagram of Circuits

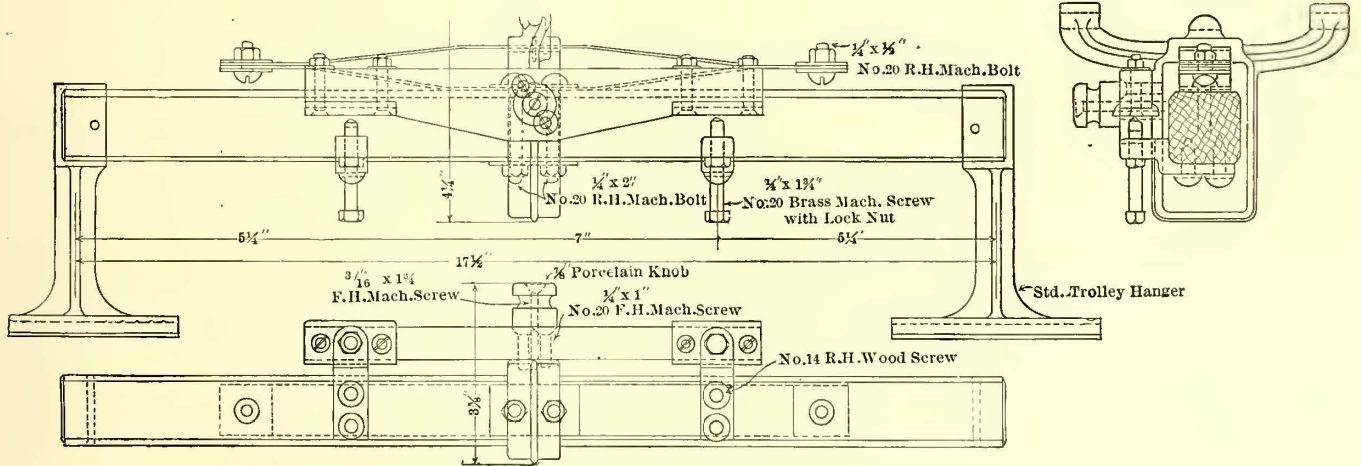


Twin City Crossing Signal—Details of Lamps and Bell Arrangement

details of construction, including the design of a contact-making trolley hanger, which serves to feed current to the signals direct from the trolley wire.

Reference to the wiring diagram will show that the lamps, of which there are six in series, and the bell are connected in series with a signal wire which parallels the trolley wire. This so-called "signal" wire is a single iron wire carried on the trolley poles for about 1300 ft. approaching a crossing. So far the signal has been erected

ing the crossing at which the bell is located. These signal hangers are used to support the trolley at each span of this approach. Their springs are so adjusted that when a car is between two spans both adjacent hangers make contact and therefore there is no actual break in the current fed through the hangers to the signal wire from the time a car passes onto the first signal span until it passes the crossing. The process of making connections is simply a transfer of contacts from one signal hanger to the other



Twin City Crossing Signal—Details of Trolley-Operated Contact-Making Hangers

only on double-track lines and its operation is comparatively simple, as contacts need be made only as the cars are approaching the intersection between the highway and the track.

The contacts, which permit current to flow from the trolley wire to the signal wire and thus serve to light the lamps and ring the bell while a car is approaching a crossing, are made in the form of signal trolley hangers. The hanger, as will be noted by reference to an illustration, comprises an 18-in. stick of maple 1 3/8 in. square in section

with the arcing taking place only at the last hanger, that located nearest the signal bell.

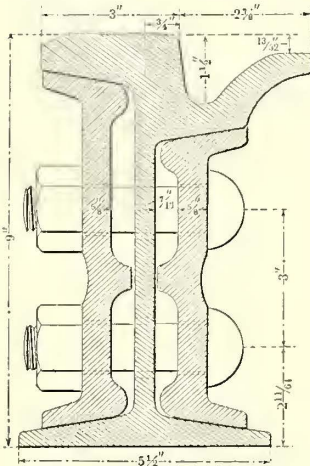
Such a simple arrangement for feeding current to a crossing bell has an advantage over some other types of crossing signals in that no matter how many cars may approach the crossing the bell will continue ringing as long as there is one car under the trolley wire supported by the signal hangers.

The lamps at the top of the signal post are enclosed, as shown in the engraving, in a sheet-steel hood bolted to the

post. The lamps and gong are connected in series so that not only the attention of a highway traveler may be attracted, but so the motorman on an approaching car may know that the gong is ringing if he sees the lights burning.

NEW CONCRETE SUB-BASE TRACK CONSTRUCTION IN HARTFORD, CONN.

The Connecticut Company has recently installed in Hartford some concrete sub-base track for paved streets. The sub-base, which is pitched to a tile drain, is formed by 6 in. of concrete followed by rock ballast above and below the ties. The rock ballast is capped by 3 in. of concrete which serves as a foundation for the asphalt pavement.



Rail Section and Type of Roadway, with Concrete Foundation and Asphalt Pavement, Hartford, Conn.

The use of rock ballast in the manner illustrated gives a greater elasticity to the roadway, while its employment in connection with treated ties means that all serious disturbances of the track are avoided for years to come. The stone used for this ballast preferably is broken to 1-in. instead of 2-in., as in practice careless trackmen will try to wedge 2-in. stone under the rails, and thus destroy the alignment, while 1-in. stone offers no trouble of this kind.

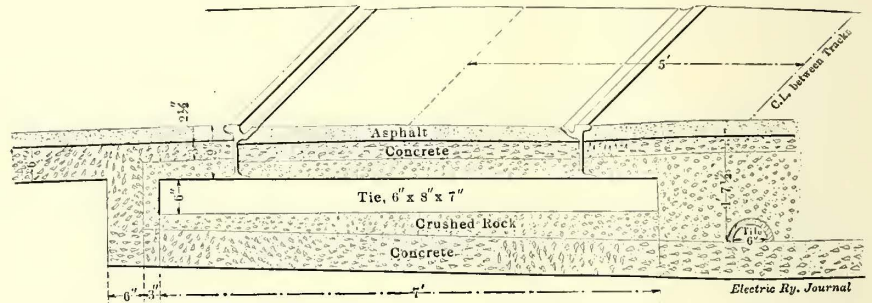
bed has not been down long enough to show either conspicuous merits or defects, but the company believes that so far as accessibility for repairs is concerned it is far superior to concrete beam construction.

CONSTRUCTION IN MACADAMIZED STREETS

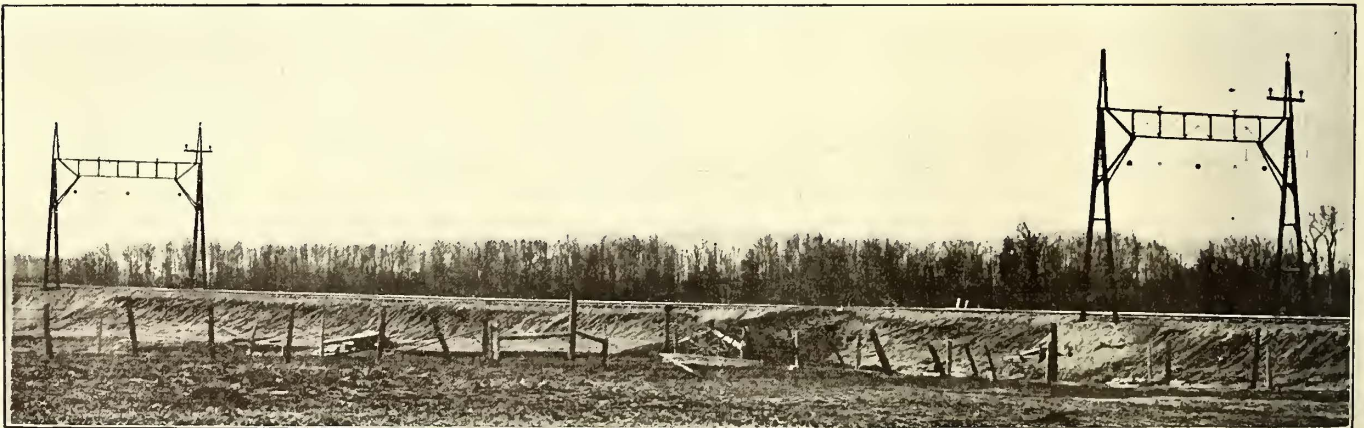
The construction in macadamized streets varies somewhat from that used in the asphalt streets. The rail, which is of the Boston grooved type illustrated, is laid on chestnut ties 6 in. x 8 in. x 8 ft. on ballast 8 in. deep with the sub-grade sloping toward a center tile in double-track construction. All tiling leads into sewer manholes.

MORE CATENARY BRIDGES FOR SYRACUSE, LAKE SHORE & NORTHERN RAILROAD

The Syracuse, Lake Shore & Northern Railroad, whose novel form of bridge construction for carrying the cat-



enary trolley system was described in the STREET RAILWAY JOURNAL of Feb. 15, 1908, has just ordered 222 bridges of the same type from the Archbold-Brady Company, of Syracuse, N. Y. These bridges will be installed from Baldwinsville to Phoenix and Fulton. The new bridges are somewhat lighter than those originally installed, and the hangers on the catenary construction will be spaced 30 ft. apart instead of 10 ft. The latter was the original



Catenary Construction on the Syracuse, Lake Shore & Northern Railroad

It will be noted that in this construction the only concrete that would require breaking up in case of track repairs is the 3-in. layer under the pavement. Although not shown on the drawing, it may be said of this 3 in. of concrete that 1 1/2 in. is a binder course consisting of 3/4-in. broken stone mixed with asphalt. On streets with heavy vehicle traffic the city requires that this concrete sub-pavement should be 6 in. thick. The tie spacing throughout for the new construction is 24 in. center to center except at joints, where the ties are spaced 20 in. centers. Of course this type of road-

hanger spacing on the line, but the intermediate hangers already have been taken off. The 30 ft. spacing will give greater flexibility to the trolley wire suspension.

Despite the fact that these catenary bridges afford so much greater stability to the line construction, it is worth noting that the original installation estimates showed that they would cost only \$800 per mile more than this railroad company's standard wood-pole construction for double track. The catenary bridges are spaced 300 ft. apart on tangers.

DATA CONCERNING ELECTRIC CAR WEIGHTS AND SEATING CAPACITY

In view of the interest lately manifested in the relation of car weights and seating capacity, the following table and diagram have been prepared, showing the variation in these quantities for 46 different cars of modern design in use on a number of roads. The majority of the cars shown are designed for interurban service. In the diagram, diagonal lines have been drawn to represent variations in the car weight per seat from 2000 lb. to 632 lb., and the data from the different roads have been plotted on the sheet in relation to the total weight and seating capacity.

The greater number of interurban cars weighed from 1200 lb. to 1333 lb. per seat, with a range of total seating capacity of from 40 to 71. The larger the seating capacity, however, the wider seems to be the range of car weights. The number of city cars included is too small to permit any

The subject attains additional importance on account of the attention now being given by many companies to the question of lightening their cars, and to a study of the cost of propelling cars of different weights. The table follows:

DIMENSIONS, WEIGHTS AND WEIGHTS PER SEAT OF CARS ON FORTY-SIX ELECTRIC RAILWAYS.

No.	Class of service.	Type of car.	Number of seats.	Weight light, ton.	Weight per seat, lb.	Length over all.	Maximum width car.
1....	City	Box	22	8.35	762	25' 4"	7' 6"
2....	"	"	28	8.75	625	29' 8"	7' 7"
3....	"	"	34	12.30	723	34' 6"	7' 9"
6....	"	"	36	15.25	847	38' 3"	7' 10"
7....	Interurban	"	40	26.0	1,300	47' 0"	.....
8....	"	"	40	29.0	1,450	46' 0"	.....
11....	"	"	42	22.0	1,048	42' 0"	.....
12....	"	"	44	31.0	1,410	52' 10"	.....
13....	Tunnel	Steel motor	46	30.7	1,335	49' 1 1/2"	.....
16....	"	"	46	31.8	1,382	50' 1 3/4"	.....
17....	Elevated	"	48	33.0	1,373	47' 7 3/4"	.....
18....	"	Steel	48	33.3	1,388	46' 9 3/4"	8' 9 1/2"
21....	"	Wood	48	29.5	1,229	46' 9 3/4"	8' 9 1/2"
22....	Interurban	"	48	35.0	1,459	51' 0"	.....
23....	"	"	48	30.0	1,250	47' 0"	.....
26....	"	"	50	35.0	1,400	52' 0"	8' 4"
27....	"	"	51	38.0	1,400	60' 0"	.....

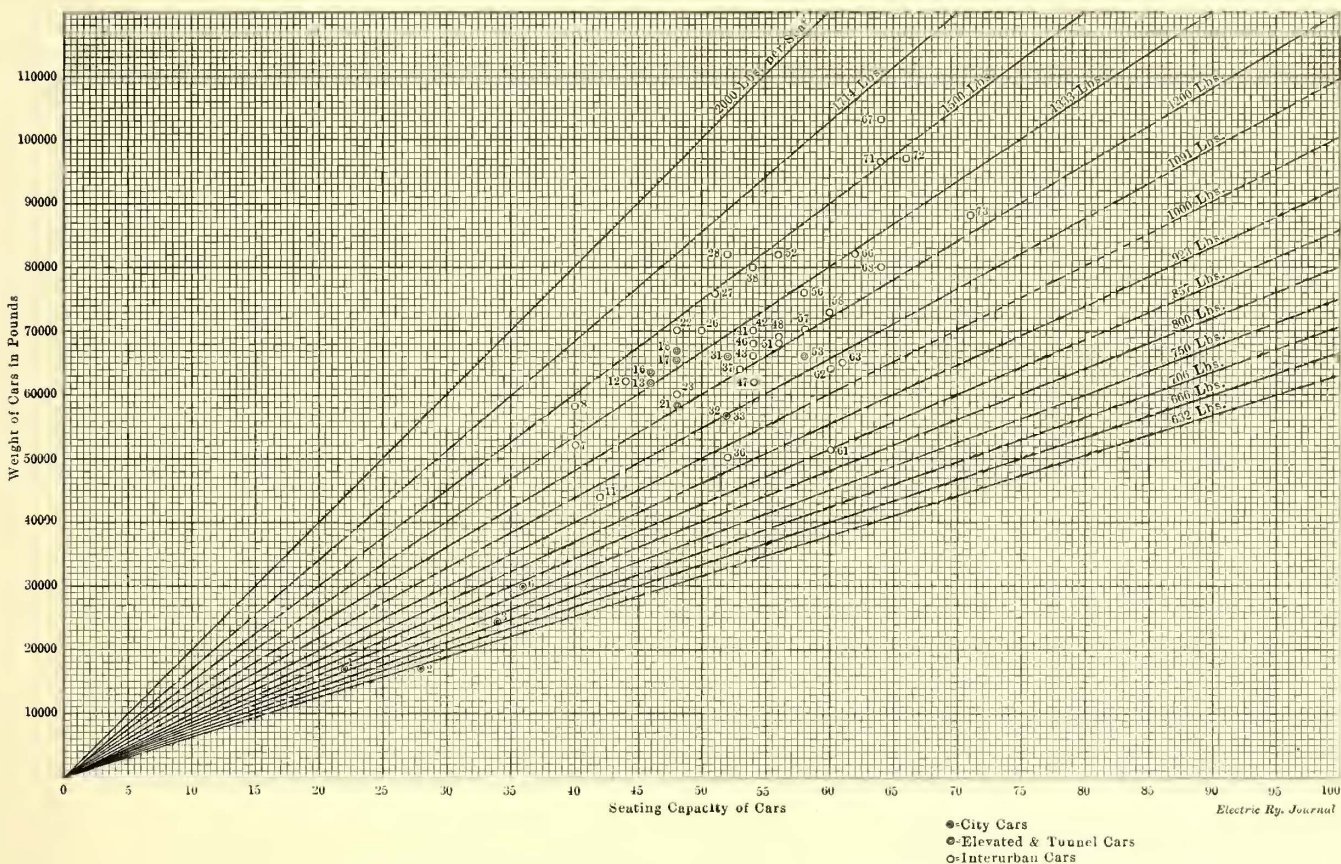


Diagram Showing Relation Between Weights and Seating Capacity on the Standard Cars of 46 Electric Railways

generalization. Examination of the interurban figures shows enough difference in the weight per seat of cars having approximately the same total seating capacity to warrant inquiry into the causes. Thus, with one interurban car seating 60 passengers, weighing but 854 lb. per seat, and another, of exactly the same capacity, weighing 1213 lb. per seat, the difference in dead weight to be hauled around is 42 per cent. Another car seating 64 passengers weighs 1603 lb. per seat. The numbers on the chart correspond with those in the table. They are not consecutive, as the data from certain roads, which were not complete, were omitted.

Without knowing the service conditions which apply in each particular case, it is not feasible to judge whether one car is too light or another too heavy for the work required, but it is clear that there is room for some reduction in car weight per seat, taking the figures as a whole.

28....	"	Steel motor	52	41.0	1,576	51' 2"	.....
31....	Elevated	Steel	52	33.0	1,209	49' 7 1/2"	.....
32....	City	Steel und. fm.	52	28.3	1,089	45' 10 3/4"	8' 6"
33....	"	Wood	52	28.3	1,089	46' 2 3/4"	8' 6"
36....	Interurban	"	52	25.0	963	44' 0"	.....
37....	"	"	53	32.0	1,208	52' 7 1/2"	.....
38....	"	Smoking and bag. comp.	54	40.0	1,481	55' 0"	.....
41....	"	"	54	35.0	1,297	52' 0"	.....
42....	"	"	54	35.0	1,297	52' 0"	.....
43....	"	"	54	33.0	1,223	50' 0"	.....
46....	"	"	54	34.0	1,250	50' 0"	.....
47....	"	"	54	31.0	1,148	50' 0"	.....
48....	"	"	56	34.4	1,228	48' 0"	.....
51....	"	"	56	34.0	1,215	50' 6"	.....
52....	"	"	56	41.0	1,464	55' 0"	.....
53....	Tunnel	Motor car	58	33.0	1,138	49' 6 1/2"	.....
54....	City	Double-deck	..	..	..	36' 6"	6' 6"
56....	Interurban	"	58	38.0	1,310	53' 5 1/2"	.....
57....	"	"	58	35.0	1,206	53' 7 3/4"	.....
58....	"	Wood	60	36.4	1,213	53' 7 1/2"	8' 6 1/2"
61....	"	"	60	25.6	854	52' 0"	.....
62....	"	"	60	32.0	1,067	51' 9 3/4"	.....
63....	"	"	61	32.5	1,065	51' 6"	.....
66....	"	"	62	41.0	1,322	60' 8 3/4"	.....
67....	"	Steel motor	64	51.3	1,603	60' 0"	9' 10 1/2"
68....	"	"	64	40.0	1,250	57' 0"	.....
71....	"	"	64	48.0	1,500	61' 6"	.....
72....	"	Two comp.	66	48.6	1,472	62' 2 3/4"	.....
73....	"	"	71	44.0	1,239	60' 0"	.....

NEW YORK CLEARING HOUSE FOR INTERCHANGEABLE COUPON TICKETS

Since Sept. 15, 1907, 13 New York interurban rail-ways have had on sale an interchangeable coupon ticket book containing \$12 of transportation in the form of 5-cent strips. These books are sold for \$10 each and are honored by the 12 companies shown on the reproduced form and by the Syracuse, Lake Shore & Northern Railroad, which was the last company to enter this agreement.

Interchangeable Ticket Book Coupons

ISSUED BY ROAD No. _____

COLLECTED BY ROAD No. _____

MONTH OF _____

Front of Ticket Book Envelope (7 in. x 3 in.)

Monthly settlements are made through H. J. Clark, purchasing agent of the Auburn & Syracuse Electric Railroad, and other interurban railways entering Syracuse. Each road forwards the collected coupons in a 7-in. x 3½-in. envelope having lines printed on the face to show the number of coupons, the number issued by the individual road and the number collected. On receiving these envelopes Mr.

COMPANY

IN ACCOUNT WITH CHAIRMAN, TRANSPORTATION COMMITTEE
OF THE

INTERCHANGEABLE COUPON TICKET BOOK ASSOCIATION

Coupons ISSUED BY YOU and accepted by the following Companies during the month of _____ as per enclosed			Coupons ACCEPTED BY YOU and issued by the following Companies during the month of _____		
COMPANIES	Coupons	Value	COMPANIES	Coupons	Value
No. 1 Rochester & Eastern Rapid Ry. Co.			No. 1 Rochester & Eastern Rapid Ry. Co.		
No. 2 Fonda, Johnstown & Gloversville R.R. Co.			No. 2 Fonda, Johnstown & Gloversville R.R. Co.		
No. 3 Rochester & Sodus Bay Ry. Co.			No. 3 Rochester & Sodus Bay Ry. Co.		
No. 4 Utica & Mohawk Valley Ry. Co.			No. 4 Utica & Mohawk Valley Ry. Co.		
No. 5 Elmira & Seneca Lake Traction Co.			No. 5 Elmira & Seneca Lake Traction Co.		
No. 6 Auburn & Syracuse Electric R.R. Co.			No. 6 Auburn & Syracuse Electric R.R. Co.		
No. 7 Rochester, Syracuse & Eastern R.R. Co.			No. 7 Rochester, Syracuse & Eastern R.R. Co.		
No. 8 Syracuse, Lake Shore & Northern R.R. Co.			No. 8 Syracuse, Lake Shore & Northern R.R. Co.		
No. 9 Cortland County Traction Co.			No. 9 Cortland County Traction Co.		
No. 10 Oneida Railway Co.			No. 10 Oneida Railway Co.		
No. 11 Syracuse Rapid Transit Ry. Co.			No. 11 Syracuse Rapid Transit Ry. Co.		
No. 12 Onondaga & Mohawk Valley R.R. Co.			No. 12 Onondaga & Mohawk Valley R.R. Co.		
To balance your account kindly remit \$			To balance your account enclosed please find \$		

Received _____ 19

Remit in New York Exchange to _____

Form Used for Accounting for Interchangeable Coupons (7 in. x 8 in.)

Clark, as chairman of the transportation committee of the roads interested, makes up a statement to each company on the accompanying form, which shows the number of coupons issued by the given company to all the others and the number of coupons accepted. If the company's account shows a debit balance, the chairman requests a remittance to cover it, but if a credit balance is shown a check for the amount is sent by him to the railway company. In this way the chairman keeps a record of the total

amount of business done with interchangeable coupons and avoids the necessity of making up vouchers and bills for small amounts to the different companies which had to be done before this scheme was put in operation. All errors in counting tickets are adjusted directly between the companies interested. The committee in charge of this work consists of Mr. Clark, R. N. Colt, passenger agent of the Fonda, Johnstown & Gloversville Railroad, and B. E. Wilson, general passenger agent of the Rochester Railway Company. A new chairman will be appointed from this committee every year to take up the work now in charge of Mr. Clark, and the expense of the clearing house will be borne proportionately by the companies interested.

ADVERTISING IN TWIN CITY CARS

The advertising in the cars of the Twin City Rapid Transit Company, Minneapolis, is solicited and managed directly by the railway. Advertising cards, with rates for this service, have been issued by A. W. Warnock, general passenger agent of the company, and A. N. Walters, advertising agent. These cards call attention to the average number of over 700 passengers carried per car per day.

Under the terms of the contracts advertisers furnish the cards at their own expense. For the full run, affording advertising in 500 cars, the cost is as follows: One month, \$275; three months, \$750; six months, \$1,350; one year, \$2,400.

For the Minneapolis run, 300 cars, the rates are: One month, \$165; three months, \$450; six months, \$810; one year, \$1,440.

The rates for the St. Paul run, 200 cars, are as follows: One month, \$110; three months, \$300; six months, \$540; one year, \$960.

Space for the cards at the sides of the fare registers is sold only on yearly contracts, as follows: Full run, \$3,600; Minneapolis, \$2,160; St. Paul, \$1,440.

A number of points in favor of advertising in cars are presented, some of which follow:

Street-car advertising knows no classes. Everybody rides, and he who rides must read.

Dozens of eyes read each street-car card at the same time, thus stimulating conversation about the article advertised.

The "circulation" offered by the cars on Twin City lines has built itself up till it compels the attention of every shrewd seeker after economical publicity.

There is one time when nearly all city people have leisure—while they ride on street cars. Then they are ready to read the car cards and they do read them.

Ninety per cent of the people who travel on "Twin City" street cars are individual money earners and individual money spenders—and because they are such, they read the cards.

It has been formally decided by the Schenectady (N. Y.) Railway to establish through service to Warrensburg by way of Schenectady and Saratoga. Through service will also probably be established between Albany and Gloversville.

INAUGURATION OF FENDER AND WHEEL GUARD TESTS AT SCHENECTADY, N. Y., BY THE PUBLIC SERVICE COMMISSION OF THE FIRST DISTRICT

On Sept. 15 the Public Service Commission of the First District, New York, began a series of fender and wheel-guard tests at Schenectady, N. Y. The object of these trials will be to determine the relative value of different types of these protective devices, using dummies under track conditions simulating those found in the different boroughs of New York City, the territory controlled by this commission. To carry out this object in the fairest manner, a special bulletin was distributed last August,* describing in detail just what requirements would have to be met by the samples submitted and how their behavior would be scored. It was arranged to have separate sets of tests for projecting fenders and for wheel guards.

As the Public Service Commission had no test track of its own, arrangements were made to carry on the experiments at the works of General Electric and Westinghouse companies for the respective convenience of Eastern and Western manufacturers. Under agreements made with these companies, neither of which has any connection with the fender business, they furnish the track, cars, power and other facilities, for which they will be paid by the Commission. At Schenectady, for example, the General Electric Company has furnished one interurban and one single-truck car to run over a section of its test tracks along the berm bank of the Erie Canal. It has also built an observation stand; erected a structure for offices, telephoning and photography, and has given its ear house for the storage and installation of the apparatus submitted. The general plans for this work are in the hands of A. W. McLimont, electrical engineer of the commission, who conducted the negotiations with W. J. Clark, C. E. Barry and W. B. Potter,

Pa., where the tests will begin on Oct. 20. This work as a whole is being conducted by the Commission's committee on safety devices, consisting of Messrs. Turner (chief of transit inspection bureau), Daggett (chief of bureau of accidents), and McLimont, with the last as chairman. Robert S. Wright is acting as secretary for the testing committee in association with J. B. Walker, second assistant secretary of the Commission.

PUBLIC SERVICE COMMISSION FOR THE FIRST DISTRICT
FENDER TEST

Number _____ Name _____ Series _____
At the end of each test a photograph will be made of the dummy in its final position after the car stops.
See Rules No. 9 and No. 11.

Test No.	Grade (Wheel) Fender	Photo No.	Grade (Wheel) Fender	Photo No.	Remarks
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
Total					
Average					General Average

General Remarks: _____

Time: Beginning of Series _____ End of Series _____

Warden: _____ Date: _____ 1908

Signature: _____

Public Service Commission Fender Tests at Schenectady—Form for Scoring Fender and Wheel Guard Trials

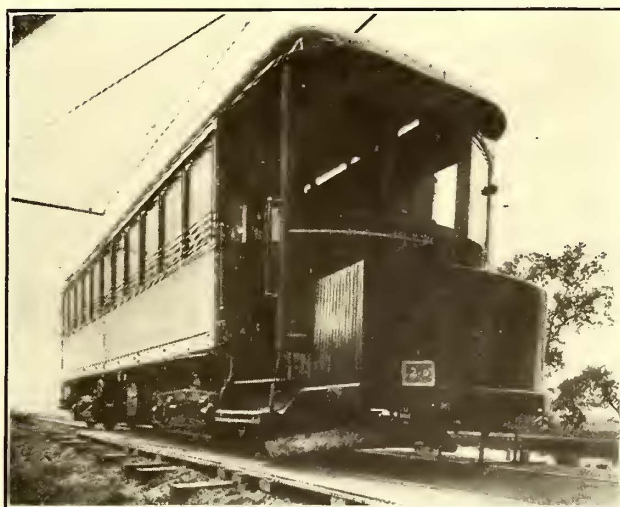
As the result of the bulletin on fender tests, so many applications were received that the Schenectady experiments alone may take about four weeks for their completion if every device tried goes through the program. The latter is remarkably thorough, for it demands six series of tests in six different positions each time on two different pavements, with a single and double-truck car, or 144 dummy-



Public Service Commission Fender Tests at Schenectady—Observation Stand Alongside Test Track

chief engineer railway and traction department of the General Electric Company. G. H. Hill, assistant engineer, railway and traction department, is carrying out the details of the work for Mr. Potter under E. P. Spaulding, supervisor of test track. Mr. Hill collaborates in this detail work with R. H. Nexsen, assistant electrical engineer for the Commission. The Westinghouse Electric & Manufacturing Company is making similar arrangements at Wilmerding,

*See ELECTRIC RAILWAY JOURNAL, AUG. 22, 1908.



Public Service Commission Fender Tests at Schenectady—Wheel Guard, Which Failed Immediately

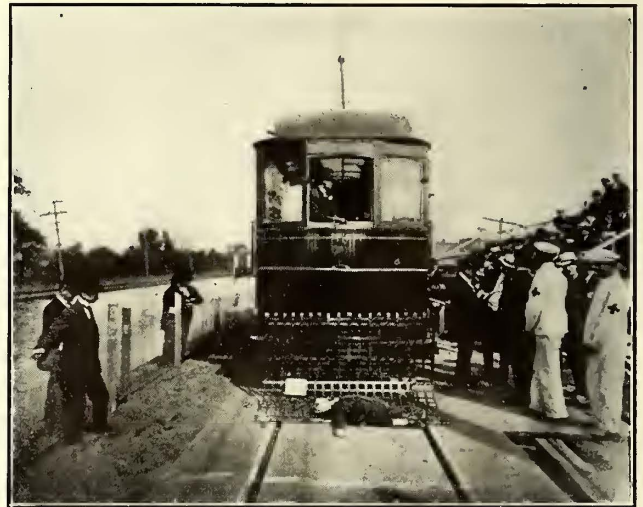
impact trials in all. In addition, the successful fenders and wheel guards will be tested with reference to passing over obstacles in the roadbed by running them against blocks spiked down in position. The test track consists of about 100 ft. of cobblestone pavement and 100 ft. of tarred board made to imitate asphalt conditions. The dummies are fully clothed and represent respectively a 50-lb. boy, a 120-lb. woman and 170-lb. man. They are furnished with leaded iron shoes and are placed in three standing and three hori-

zontal positions for projecting fenders and six horizontal positions for the wheel guards. It was assumed, naturally, that standing trials were needless in the case of wheel guards. The various positions were illustrated and their application explained on page 514 of the *ELECTRIC RAILWAY JOURNAL* for Aug. 22. The speeds are respectively 6 m.p.h. and 15 m.p.h., determined by a speedometer.

If the dummy is for the most part under the fender or wheel guard, but still is partially picked up or removed from the track, a test of grade "C," counting 2 points.

If the dummy is entirely under the fender or wheel guard, but dragged sufficiently to prevent its going under the car or wheels, a test of grade "D," counting 1 point.

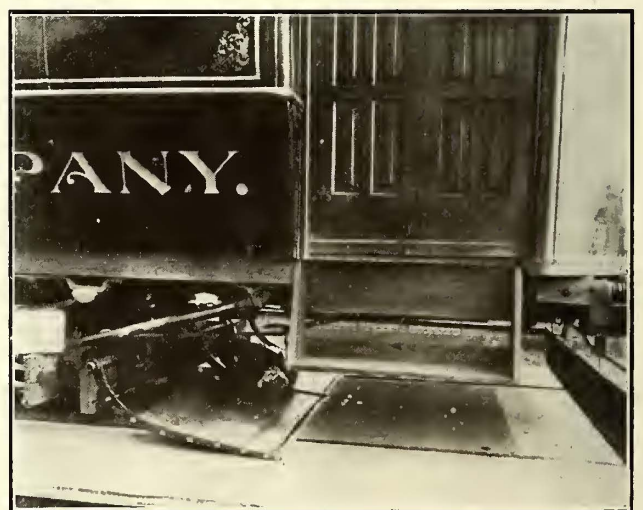
If the dummy passes under the car or wheels, the test is a complete failure, grade "E," counting 0 points.



Public Service Commission Fender Tests at Schenectady—Two Successful Pick-ups of a 50-lb Dummy on Smooth Pavement by a Grid Fender with Automatic Trippers

Since the experiments are being made with clothed dummies, which are easily dismembered and repaired repeatedly unless completely destroyed, the scoring system considers principally the pick-up position of these figures after being struck rather than their condition. The credits, which are assigned by Messrs. Turner and Daggett and recorded by

The tests are conducted in six series corresponding to the use of a certain weight dummy for a given speed. If 50 per cent of the tests in any series on any fender or wheel guard are not of grade "A" (perfect pick-up or complete removal), the tests on such device are immediately discontinued. Preliminary to the trials, every fender or wheel



Public Service Commission Fender Tests at Schenectady—Partly Successful Pick-up of a 120-lb Dummy Placed on Cobblestone Section

Public Service Commission Fender Tests at Schenectady—Successful Pick-up by Combination of Swinging Guard and Truck Fender, Showing Also Distortion of Fender

Messrs. Nexsen and Hutcheson when the car is brought to a standstill, are arranged on the form shown on page 670, according to the following grading:

A complete pick-up or removal from the track by either the fender or wheel guard, a test of grade "A," counting 4 points.

If any part of the dummy remains under the fender or wheel guard, but is partially picked up or removed from the track, a test of grade "B," counting 3 points.

guard is carefully measured and clearances noted on the form reproduced in the article previously mentioned.

EXPERIMENTS ON THE FIRST DAY

When the testing engineers and operators arrived at the Schenectady grounds, Tuesday morning, Sept. 15, they found everything in the best shape, even to the provision of a wire fence along the canal bank to prevent dummies from being thrown into the water.

By 10 o'clock everything was ready for the first series of tests. The initial fender submitted was of the two-part grid type connected by short chains and equipped with brass arms, which tripped the fender automatically on striking a dummy. This fender was attached to the 25-ton double-truck car, which had been provided with a false dasher to avoid injury to the car body. On being brought to the test track, the fender was photographed and then separate photographs were taken at the end of each test to show the condition of the fender and the position of the dummy. For purposes of identification, every photograph will show a slate marked with the number of the device tested and also indicating the number of the trial. The tests on the first fender submitted were as follows:

Speed—m.p.h.	Dummy—lb.	Paving	Positions
15	50	Cobblestone	6
6-8	50	Cobblestone	6
15	50	Smooth Tarred Wood	6
6-8	50	Smooth Tarred Wood	6
15	120	Cobblestone	6

It will be seen from the foregoing table that fender No. 1 was subjected to 30 trials before failure. It made more than the required score with the lightest dummy, but when the 120-lb. dummy came into play the pick-ups were poor, as the front grid became more and more distorted, and on the thirtieth trial one of the brass trippers broke, throwing the fender completely out of service. It should be noted that the tests were made on level, tangent track with a non-oscillating car, and that even in its normal position the fender was very close to the head of the rail. The general opinion among those present was that the grids were too light, while the inventor himself said that the trippers should have been of malleable iron.

The next device tested was already attached to the other end of the 25-ton car. It consisted of a wheel guard made of hinged interconnected piping at the front of the car, while under the car there was a V-shaped guard of some fiber composition in front of the wooden guard across the front of the truck. This combination proved a failure in the only two tests made, as it completely destroyed two 50-lb. dummies over cobblestone at 15 m.p.h., and was therefore retired.

The third competitor submitted a wheel guard which was attached to a 12-ton single-truck car. This comprised a swinging board at the front of the car and a one-piece slightly curved fender attached to the wooden guard of the truck. The swinging of the front board actuated a lever which dropped the fender to the roadbed. The successful tests on this guard made on Tuesday covered 18 trials, as follows:

Speed—m.p.h.	Dummy—lb.	Paving	Positions
15	50	Cobblestone	6
15	50	Smooth Tarred Wood	6
6	50	Cobblestone	6

At the end of the eighteenth test, the swinging wooden guard showed several cracks, while the fender under the car was bent along the edge seriously enough to spoil the last pick-up. It was planned, however, to continue trials with it on Wednesday.

It is apparent from the foregoing that the fenders and wheel guards must be very substantially constructed if they are to meet the requirements of the Commission. It is realized that in some respects these contrivances are subjected to a harder trial than would occur in practice, owing to the large number of successive trials on one fender and

the use of metal-foot dummies, but the tests will certainly show to what extent pick-up ability is affected by mechanical injuries, such as would occur from pounding on city pavements.

ATTENDANCE

The wide interest taken in this work and the hearty appreciation of its importance was shown by the large number of public officials, railway representatives and manufacturers present. The Public Service Commissions for the First and Second Districts were represented respectively by Commissioners William McCarroll and J. E. Sague. Bion J. Arnold, consulting engineer to the First District Commission, who is also chairman and chief engineer of the Chicago Traction Board of Supervising Engineers, was present with the following members of the latter body: George Weston, assistant to chief engineer and representing the city of Chicago; Harvey B. Fleming, of the Chicago City Railway, and John Z. Murphy, of the Chicago Railways Company. The Public Service Commissions were also represented by A. W. McLimont, in charge of tests, and C. R. Barnes, electrical expert of the Second District. The Massachusetts Railroad Commission was represented by L. H. McLain, railroad inspector, Melrose, Mass.

In addition to these members of public service bodies, many electric railway men were present, not only from New York State, but from as far west as Portland, Ore., and as far north as Toronto, Ont. Naturally the General Electric Company's engineers took an active interest in the tests and many were present. Among the other guests were the following:

Public Service Commission for the Second District, Albany, N. Y.—Archibald Buchanan, Jr., supervisor of equipment.

Public Service Commission for the First District, New York City—D. L. Turner, chief of transit inspection; George F. Daggett, chief of accident bureau; R. H. Nexsen, assistant electrical engineer; Pierre P. Pullis, official photographer; Edward D. Hutchison and Avery M. Schermerhorn, transit inspectors.

United States Army—Captain J. A. Shipton, Fort Totten; Earl Wheeler, instructor Engineering School, Washington, D. C.

Railroad company representatives—The Connecticut Company, H. L. Wales, superintendent Waterbury District, Waterbury, Conn.; United Traction Company, Albany, Edgar S. Fassett, general manager; C. H. Dietz, secretary; H. A. Benedict, mechanical and electrical engineer. Schenectady Railway Company, E. F. Peck, general manager. Fonda, Johnstown & Gloversville Railroad, W. H. Collins, general superintendent and purchasing agent, Gloversville; John Sibbald, master mechanic, Gloversville. Schenectady Railway Company, George L. Radcliffe, superintendent of transportation; F. J. Doyle, master mechanic. Toronto Railway Company, W. R. McRea, superintendent motor, truck and mechanical department, Toronto, Ont. Portland Railway Company, F. I. Fuller, manager; L. F. Fuller, Portland, Ore. Third Avenue Railroad Company, of New York, T. F. Mullaney, chief engineer. Stone & Webster, Boston, Mass., E. M. Kephart, engineer.

The tests on the first day began at 10 a. m. and were ended about 5:30 p. m. An excellent buffet luncheon was served at noon by the General Electric Company in its car house, near the testing grounds.

PREPARATIONS FOR EXHIBITS AT THE ATLANTIC CITY CONVENTION

The exhibit committee of the American Street & Inter-urban Railway Manufacturers' Association has practically completed all its plans for the arrangement of the exhibits at the convention next month, and promises that they will be more numerous and finer than ever before. This means, of course, that the electric railway exhibits at the 1908 convention will be better than any shown in connection with the previous meeting of any organization. As already announced, the new Million Dollar pier has been selected for the site of the exhibit. A plan of this pier was published in the *ELECTRIC RAILWAY JOURNAL* of Aug. 8. Since that time the Manufacturers' Association has received applications for space from a large number of exhibitors, and has made the assignments shown on page 673. The list of exhibitors is arranged alphabetically, and the plan of the pier published in the issue of Aug. 8 is reproduced so that the exact location of each exhibit can readily be found.

It is the purpose of the association to furnish hand-somely the lobby near the entrance to the pier by laying red crex on the floor and covering it with Turkish rugs. An attractive fountain in classical style will be erected near the middle of the lobby, which will also be decorated with palms, ferns and vases and supplied with writing desks for the ladies, and other furniture in mission style. The exhibitors who have taken booths surrounding the lobby have agreed to pay especial attention to the furnishing of their spaces, so as to be in harmony with the general arrangement adopted, and have agreed to have them finished by Oct. 10. A color scheme has also been worked out for the rest of the pier and for the exhibits. The aisles will be covered with green crex, which will also be employed on the floors of the booths.

The exhibit committee has also decided to do away with the use of cheap cardboard and oilcloth signs. Last year the names of the manufacturers appeared above the entrance. It was found that in this position the name was difficult to read unless a person stood some distance away from the booth. Consequently a change will be made this year by placing the signs in the rear, as shown in the accompanying engraving. In addition, the exhibit committee will furnish free of charge to each exhibitor a signboard ready for lettering. On all side booths this sign will be hung directly under the name of the firm, as shown in the illustration. For booths which extend from one aisle to another these signs will be lettered on both sides, so that they can be read from either aisle. By this arrangement all signs will be uniform and the general appearance of all the exhibits will be improved.

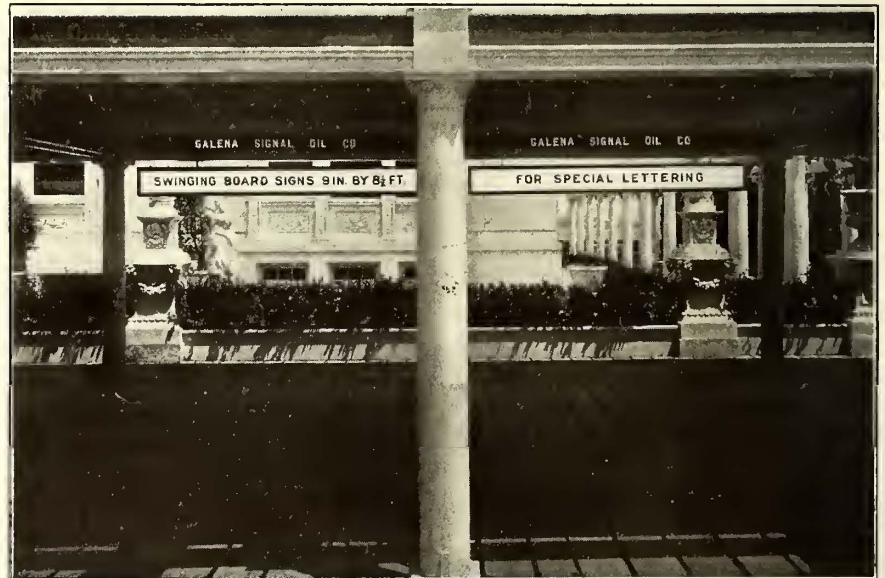
The committee is making a special effort to induce the manufacturers to have all of their exhibits ready by the evening of Oct. 10, as a great many delegates will undoubtedly reach Atlantic City on that and the following day. It has also issued a series of directions to manufacturers indicating how exhibits are to be sent and how boxes are to be marked.

OVERCOMING INDUCTION FROM A TRANSMISSION LINE

The Oregon Electric Railway Company, of Portland, Ore., was recently confronted with the necessity of overcoming the effects of induction from a 33,000-volt transmission line on the operation of a grounded telegraph wire strung on the same pole line, the transmission not being transposed. The Oregon Electric Railway Company handles its trains by telegraph almost exclusively, the only exception being that a telephone circuit is used as an auxiliary. Telephones are installed in shelter shed stations and in each freight caboose, the latter being equipped with a light pole with terminals which are hooked over the telephone circuit when it is desired to reach the dispatcher from points between stations.

The telegraph circuit is 50 miles long and is supplied with main battery at Portland from one side of a three-wire grounded neutral lighting system in the general office building and 30 cells of gravity battery at Salem. At intervals of about every 10 miles a 2-microfarad condenser is connected, one side to the line and the other to ground.

According to C. A. Coolidge, superintendent of the Oregon Electric Railway Company, these condensers take care



Proposed Arrangement of Signs at Atlantic City Convention

of the induction effectually, and it is possible to work through a heavy escape, which would put the telephone out of commission entirely.

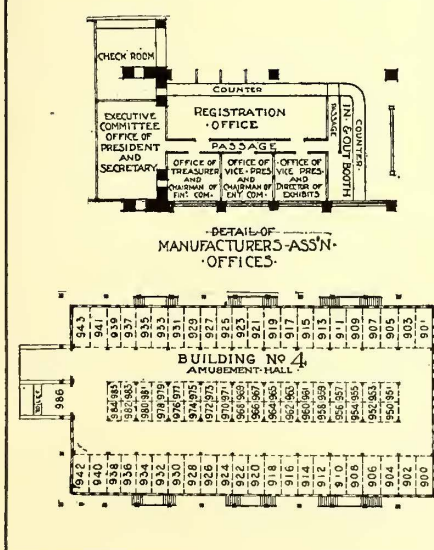
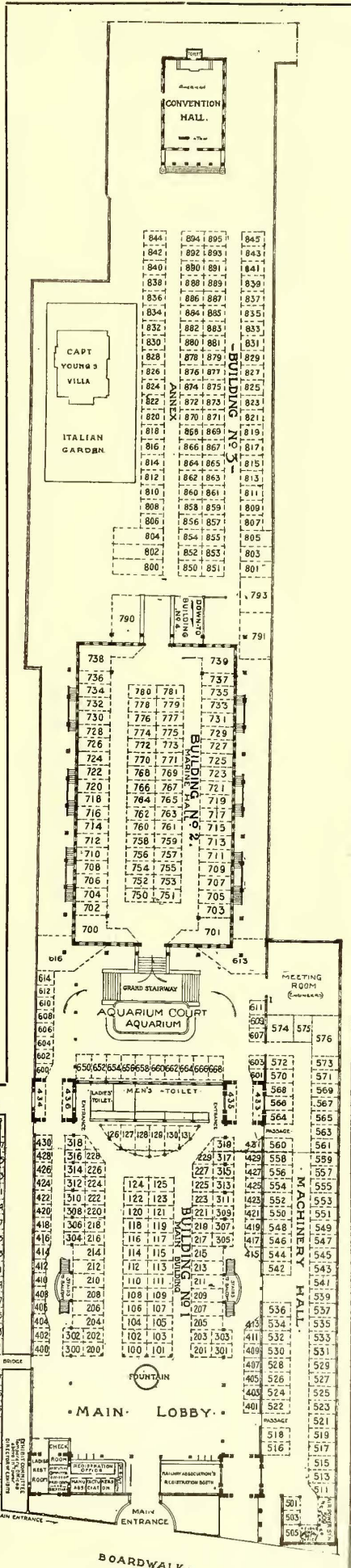
The Electric Railway Commission of the District of Columbia has issued its first important order regarding service requirements. It is to the effect that "some through service, at least, should be provided on the Brightwood line of the Washington Railway & Electric Company."

Three reports have been submitted to the commission by Secretary Eddy—a general report, one relating to the use of airbrakes on heavy grades, and the third a report in the Brightwood case. Three recommendations made by him were adopted by the commission, and will be submitted to the Interstate Commerce Commission for its approval and their promulgation in the form of official orders. It has been decided that hereafter when accidents occur the commission will institute investigations to ascertain the facts for such further action as in their judgment may seem necessary.

LIST OF EXHIBITORS AT ATLANTIC CITY CONVENTION

Adams & Westlake Co., The (774).
Aills-Chalmers Co. (750 to 757 inc.).
American Blower Co. (542-544-546).
Am. Brake Shoe & Foundry Co. (763-765-767)
American Fender Co. (522-524).

Johns-Manville Co., The H. W. (868 to 871 inc.).
Jones & Laughlin Steel Co. (433).
Kenfield-Fairchild Publishing Co., The (415-17-19).
Kent & Co., Edwin R. (600-02-04-06).



SUMMARY OF BOOTHS.
TRETTLE FOR CAR EXHIBITS BOOTHS 1-50
BUILDING NO. 1 (MAIN BUILDING) 100-500
MACHINERY HALL 500-600

Plan OF BOOTHS AND EXHIBIT SPACES
YOUNGS MILLION DOLLAR PIER
FOR AMERICAN STREET AND INTERURBAN
RY ASSOCIATION CONVENTION
OCTOBER 12-18, 1908

ISSUED BY THE EXHIBIT COMMITTEE OF THE AMERICAN STREET & INTERURBAN RY-MANUFACTURERS ASS'N
H. G. McCONAUGHY, DIRECTOR OF EXHIBITS
P. E. LANE, CONTRACTOR
SEWARD G. DOBBINS, ARCHITECT

AMERICAN STREET & INTERURBAN CONVENTION BULLETIN NO. 3

Secretary B. V. Swenson, of the American Street & Interurban Railway Association, has issued Bulletin No. 3 in relation to the conventions to be held at Atlantic City, N. J., from Oct. 12 to 16. This bulletin gives the programs of the various associations in full, and much other information regarding the meetings of interest to those who are planning to attend the conventions. The bulletin states:

PLACE OF MEETING

The many advantages of Atlantic City as a convention city have been given consideration in previous bulletins, both this year and last year. Those who attended the 1907 convention need no introduction to the desirable features Atlantic City affords as a convention city. The peculiar location, the remarkable climatic conditions, the magnificent hotels, the unique and interesting boardwalk, the perfect bathing beach and the many other attractions, together with the excellent facilities for holding meetings and exhibitions, make Atlantic City the leading convention city of the country. In addition to being near to New York, Philadelphia, Baltimore and Washington, it has excellent train connections with all parts of the country.

HOTEL ACCOMMODATIONS

We desire to impress upon you once more the advisability of securing hotel accommodations immediately, if you have not already done so. Select your hotel and address the manager, stating the number of rooms desired, whether with or without bath, number of people who will probably occupy rooms, and whether or not any ladies will be in the party. Fifty hotels (with their rates) were listed in Bulletin No. 2. All of these hotels are within a short distance of Young's new million-dollar pier, where the convention meetings and the exhibitions will be held. A booklet descriptive of Atlantic City, together with a pamphlet giving additional data concerning the hotels, names of their managers, rates and other information of this character, will be sent to you upon request. There will be no advance in the regular hotel rates during the convention week.

EXHIBIT OF MANUFACTURERS' ASSOCIATION

The American Street & Interurban Railway Manufacturers' Association is making great preparations for a magnificent exhibit which will cover the entire area of Young's new million-dollar pier. This exhibit will be fully as large as in previous years and more comprehensive and attractive. One hundred and fifty different companies have already been assigned exhibit space, and the total amount of floor space will be about the same as that used at the 1907 convention on the steel pier.

TRANSPORTATION MATTERS

The usual arrangements have been made with the various passenger traffic associations whereby those attending the convention will be enabled to obtain round-trip tickets upon the certificate plan. Atlantic City is reached from New York and the East by the Central Railroad of New Jersey and the Pennsylvania Railroad, and from Philadelphia and the West by the Pennsylvania Railroad and the Philadelphia & Reading Railroad.

More detailed announcements relating to transportation and railroad rates will be given in Bulletin No. 4, which will be issued about Oct. 1.

REGISTRATION AND INFORMATION BUREAUS

Association Booth.—All the delegates and guests of the American, Accountants', Engineering, Claim Agents' and Transportation & Traffic associations will register and receive badges at the Association Booth, which will be located at the boardwalk entrance to Young's million-dollar pier. This booth will be kept open from 9:30 a.m. to 5:30 p.m. during all days of the convention. It will be the general headquarters for the American, Accountants', Claim Agents', Engineering and Transportation & Traffic associations, and will serve as an information bureau concerning association matters.

Manufacturers' Booth.—The Manufacturers' Association will also have a booth at the same place, which will take care of similar matters relating to the exhibitors and the members of the Manufacturers' Association.

Post-Office, Telephone and Telegraph.—There will be a local post-office, telephone booths and telegraph stations located at the boardwalk entrance to Young's million-dollar pier, convenient to the place of registration.

ENTERTAINMENT

Those in charge of the entertainment features of the convention will have some announcements to make in the near future. It is expected that the annual reception will take place on Tuesday evening, that a theater party will be given on Thursday evening, and that the vaudeville performance will be held on Wednesday evening. In addition there will be a number of other forms of amusement, which will be especially arranged for the ladies of the convention.

CONVENTION DAYS

The morning of Monday, Oct. 12, will be reserved for registration purposes, and the first meetings of the convention will be held on the afternoon of that day. The meetings of the various associations will continue throughout the week, closing on Friday, Oct. 16. Considerable attention has been given to the arrangement of the days upon which the various associations will meet. The following general schedule of meeting days has been decided upon:

Monday, a.m., registration and badges; p.m., Claim Agents', Transportation & Traffic.

Tuesday, a.m., Claim Agents', Transportation & Traffic; p.m., American, Engineering, Claim Agents'.

Wednesday, a.m., Accountants', Engineering, Claim Agents', Transportation & Traffic; p.m., American, Engineering.

Thursday, a.m., Accountants', Transportation & Traffic; p.m., American.

Friday, a.m., Accountants', Engineering; p.m., Engineering.

MEETING PLACES

Two convention halls, located on the convention pier, and each capable of seating approximately 300 people, will be provided for the meetings of the convention. In addition, suitable meeting rooms are available in the Chalfonte Hotel and in the Traymore Hotel.

All of the meetings of the American Association and of the Transportation & Traffic Association will be held in the Greek temple, near the outer end of the convention pier. The Accountants will hold their two sessions on Wednesday at the Chalfonte Hotel, and their Thursday and Friday sessions in the Aquarium court hall, near the boardwalk end of the convention pier. The Engineers will hold their Tuesday and Wednesday sessions in the Aquarium court hall and their Friday session in the Greek temple. The Engineers have no Thursday session, that day being set apart for the inspection of exhibits. The Claim Agents will hold all of their sessions at the Traymore Hotel.

CONVENTION PROGRAMS

The committee on subjects has been actively engaged on the programs of the five associations for several months past, and there is every prospect of a convention at which will be presented a number of interesting papers which will be of great value to the member companies. Each of the five associations will have a program which in itself will amply repay those in attendance. While the programs of the various affiliated associations are practically complete, as shown in this bulletin, it is expected that the official program will show several additional papers bearing upon subjects of more than usual interest. The program of the American Association will be announced later.

In addition to the programs as published in last week's issue of the ELECTRIC RAILWAY JOURNAL, the bulletin gives the names of those who will be contributors to the symposium on "The Possibilities of a Well-Conducted Publicity Department," which is to be presented before the Transportation & Traffic Association on the morning of Oct. 14. They are:

George Sabin Brush, clerk, transportation department, Boston Elevated Railway.

B. R. Stephens, general traffic manager, Illinois Traction System, Springfield, Ill.

Charles E. Flagg, department of publicity, Inland Empire System, Spokane, Wash.

George H. Gall, publicity manager, Washington, Baltimore & Annapolis Electric Railway, Baltimore, Md., and Charles W. Lamb, advertising expert, Milwaukee, Wis.

CAR INDEX BOARD OF THE UNITED RAILWAYS COMPANY OF ST. LOUIS

There has just been completed in the office of M. O'Brien, master mechanic of the United Railways of St. Louis, a car index board that serves its purpose in a very satisfactory way. The object of the board is to show at a glance the number and type of cars from each and all divisions in the general repair shops, the total number of each type of car on the entire system and the totals of all cars owned by the company.

The accompanying engraving shows the details of construction and method of removing or placing the numbered blocks in the grooves. The complete board consists of five sections, each 55 in. high and 34 in. wide, all joined together. Each section has 12 vertical grooves, making a total of 60 grooves. Forty-eight of these grooves are used for the cars at the different divisions, four to seven grooves being allotted to a division according to the number of cars in use; twelve grooves (one section at the end of the board) are for the cars held in the general repair shop, one groove

is represented by a different colored block; passenger cars by blue with white numbers, work cars by yellow with black numbers, snow sweepers by red with white numbers, etc. On this small board opposite the name of each type of car, one of these numbered blocks is fastened; then the total number of that type is written with chalk. Below this list is presented the total number of all types of cars on the system.

Each day as the reports from the various car houses are received, a clerk in the master mechanic's office makes the necessary transfers of car numbers. Thus, there is presented at all times a complete detailed record of the location and numbers of all cars on all divisions of the system.

AN ADDRESS TO MOTORMEN AND CONDUCTORS*

BY H. A. DAVIS, SUPERINTENDENT RAILWAY DEPARTMENT OF THE NASHVILLE RAILWAY & LIGHT COMPANY

The subject which I have chosen to talk to you about you will find printed on paper and posted in the order book, also on the order board, therefore, you will not likely hear anything new, provided you have kept posted on the orders issued.

My object is to impress upon your minds the importance of carrying these rules out as the company requests you to. Why does the company go to the trouble and expense to enforce them? Because, when a man lives up to them, expenses are reduced on account of fewer accidents and a better service both to the company and the public. Remember that the public furnishes the company's revenue, therefore it is necessary that every employee should be polite, accommodating and courteous in his attitude toward the public. A person boarding one of our cars must be treated with the same respect and the same courteous treatment that he would receive in a clothing store or grocery by the clerks or the proprietor.

Fifty per cent of the men who lose their positions with this company endeavor to be reinstated again by sending some friend, wife or mother to see the superintendent for the purpose of influencing him to take back the man who has lost his position. You can readily see the extra amount of trouble, as well as the embarrassment you cause the superintendent in doing a thing of this kind.

Records are kept of every motorman and conductor employed by this company—good and bad—and you see them before they go on file, consequently you and the superintendent know them alike. Then, why should it be necessary to bring in the third party who knows nothing of your service or efficiency?

It is not my object or intention in this talk to reprimand or commend any one; my main object and desire are to lay before every employee of the Nashville Railway & Light Company a few facts worthy of his consideration, that he may profit thereby.

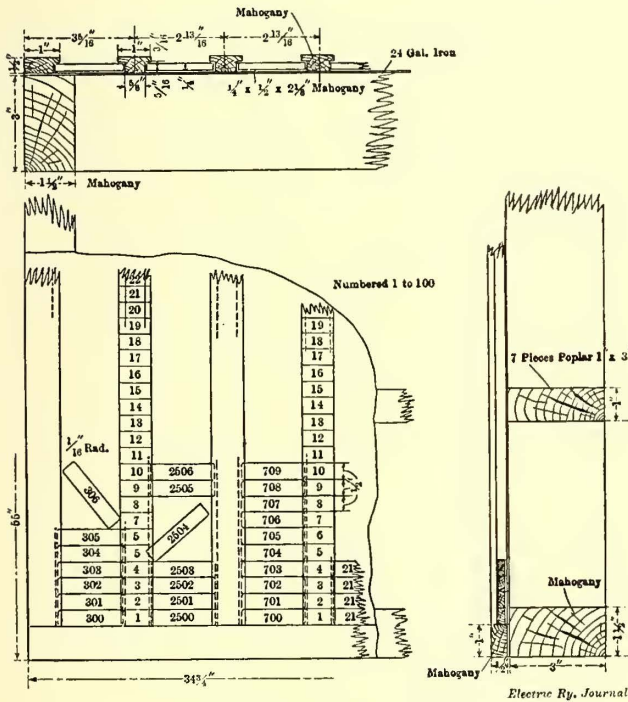
It is not the desire of this company, or any of its officials, to have any man in its employ lose his position, but it prefers that he become more proficient in the discharge of his duties, and retain his position.

A good policy for every man working for a salary—whether he is working for this company or some other company—is to endeavor to make his services so useful and profitable to his employers that they will not dispense with him.

Why is it that some of the men who have been running street cars for years have never had any serious accidents or trouble? It is because they have had their minds on their work, have exercised their judgment at all dangerous points on the road, and are always anxious to carry out all orders issued. A man who does these things is working not only for the company's interest, but for his own interest as well.

No man is worthy of a position (I care not how humble it may be) who cares nothing more for his job than to simply draw his salary and get off with as little work and

*Delivered in the Lecture Room of Nashville Street Railway Y. M. C. A.



Car Index Board

being assigned to each of the nine divisions and three reserved for future use.

By reference to the illustration it will be seen that the dividing strips between the grooves are numbered from 1 to 100, commencing at the bottom. These numbers are spaced 1/2 in. apart, which is equal to the width of the blocks. Thus, the number opposite the top block in a groove is the total number of a type or series of cars represented by the blocks in that groove. This scheme of numbering makes counting unnecessary.

Reference to the engraving will show that any block may be removed from or replaced in any groove without removing or disarranging any others. In this way all the numbers of a series can be kept in their proper order. Each car shed or division is indicated by name and number at the top of the board, the last section to the right being marked, "General Repair Shops."

A small board attached at the upper right-hand corner serves as an index to the large board. Each type of car

responsibility as possible. A man of this kind is not much use to himself or to his fellow-man; he is never promoted, and seldom holds a position longer than it takes to find him out; he is always in trouble and out of a job most of the time.

Accidents are the most serious things that a corporation has to deal with; they cost money whether the company is at fault or not, by causing legal expense, therefore the only thing to do is to avoid having accidents, if you would reduce unnecessary expense to the company. There is no doubt that it lies within your power to reduce the number of accidents which the company is now having by 50 per cent, and this without any cost or extra trouble to its employees, by simply being on the alert.

Conductors, remain on the rear platform, near the step, as much as possible where you will be in position to catch any person in the act of falling. Do not ring car ahead until all are safely aboard. See that the passage-way of the car is not filled with satchels and bundles which prevent passengers from passing along without falling over them. Do not get into any unnecessary conversation with passengers, as this distracts your attention from your work. Be polite and courteous to every one on the car—black or white; it costs you nothing to be polite and you will feel better by so doing.

Motormen, it is just as easy for you to stop your car one car length or two car lengths from the car ahead of you as it is for you to see how close you can get to the car ahead without striking it. Why don't you do it? Don't let your car run at a dangerous rate of speed down grade. Don't look around in the car while it is in motion. Ring your gong when passing a standing car, or one that is slowing up to make a stop; also run slowly, having your car under perfect control. Ring your gong at all cross streets. Run slowly in dangerous places. Make full stop when passengers are getting on or off car.

All these things (and many more) are in the order book for you to read and study and work by. What reason have you for not complying with orders? I know of no order that is unreasonable or cannot be carried out. The company will insist that every order which it has posted be executed.

Some men are more destructive than others, naturally so; others are indifferent as to what may happen to other people's property. A good rule to go by when you take a car out of the barn is to handle it in the same manner as you would if it belonged to you and you would be responsible for any damage done to it while in your charge.

Do you realize that it costs this company \$200 per month to replace window glass that has been broken?

Many motormen will run a car day after day without sending it to the barn for repairs; other motormen are changing cars constantly for one thing or another, and do not understand why it is their car is always out of order. Let me tell you where the trouble lies. If you should happen to get a car out of the barn not in good condition, report it until it is in good condition, and then keep it so by properly feeding the current to the motors; don't try to get the current on all at one time; that is one reason the company spends so much annually for repairing the electrical equipment. A motor is the same as a person in one respect; you can overwork it and destroy its usefulness in a short time.

I have seen motormen set the brake while current was on, so that the car would slow up before they got to the place they wanted to stop. This practice is not only detrimental to the entire equipment, but is using up power unnecessarily. When you use your brake, throw off your power, and in cutting off the current, do it quickly—don't drag it off and burn up the controller and yourself, too, and maybe your passengers. A great many accidents are caused by controllers burning up, frightening passengers into jumping off the car.

Another thing I want to impress upon you, and that is this: No matter what your occupation may be, you should give in return for the compensation received, as per agreement between employee and employer, your very best service and loyalty both to the company and its officers.

The only way to advance in this life is to take an interest in the work assigned you; be honest and truthful with every one, for in so doing you will make your position a comfort to you, and live a life worth living.

LUBRICATION OF MOTOR BEARINGS, JOURNAL BEARINGS AND GEARING ON ELECTRIC CARS*

BY C. H. JULIUS, MANAGER OF THE ELECTRIC RAILWAY COMPANY OF HAARLEM, HOLLAND

Considerable progress has been made during the last few years in the subject of lubrication of these parts. It is somewhat remarkable therefore that of the 117 companies which replied to the data sheet, less than 60 have adopted the improvements. Undoubtedly this has been due in a large part to the fact that much of the apparatus now in use is unsuitable for the most approved methods of lubrication, but manufacturers have awakened to the importance of the subject and now are modifying their designs to profit by the experience acquired.

ARMATURE BEARINGS

With few exceptions, most of the companies appear to be using either malleable iron, cast steel or bronze bearings filled with anti-friction metal. One company, the Teltow Kreisbahn, reports the use, at the commutator end of the armature shaft, of plain malleable iron bearings and states that it has secured from them a life of 400,000 car-km (250,000 car-miles), a figure considerably in excess of that usually secured from white metal. It is hardly probable that this practice will become general on account of the disastrous effects of a hot bearing, but it is interesting to note that this method, though rare, has been practically applied.

On the other hand, the data at hand indicate a tremendous variety in the kinds of anti-friction metal used and in their price, which varies from 1 fr. to 5.50 fr. per kilogram (9 cents to 50 cents a pound). The table below gives some of the more common compositions. The prices quoted in the last column are based on the following unit figures, but it should be understood that the selling price of the anti-friction metal would be from 20 per cent to 25 per cent above that quoted for the actual material.

UNIT PRICES ASSUMED FOR BASIC METALS.

Tin	fr. 3.50	per kg., or 32 cents per lb.
Copper	fr. 1.80	per kg., or 17.1 cents per lb.
Antimony	fr. 1.00	per kg., or 9.1 cents per lb.
Lead	fr. 0.35	per kg., or 3.2 cents per lb.

COMPOSITIONS AND COSTS OF VARIOUS ANTI-FRICTION METALS

Tin. Per Cent.	Antimony. Per Cent.	Copper. Per Cent.	Lead. Per Cent.	Bismuth. Per Cent.	(Price of material— Francs per kg.	Cents per lb.
87	7	6	...	...	3.225	29.3
86	8	6	...	...	3.20	29.1
83.5	11	5.5	...	...	3.13	28.5
83	11.5	5.5	...	...	3.12	28.4
83	11	6	...	...	3.125	28.4
83	8.5	8.5	...	...	3.14	28.6
82.5	11.65	5.85	...	...	3.115	28.3
82	12	6	...	...	3.10	28.2
82	6	12	...	...	3.15	28.7
81	11	6	2	...	3.065	27.9
81	10.5	8.5	...	...	3.09	28.1
80	12	6	2	...	3.04	27.7
80	10	10	...	...	3.08	28
80	12	8	...	...	3.06	27.9
78	13	...	9	...	2.89	26.3
75	17	8	...	...	2.935	26.7
72.8	18.2	9	...	...	2.89	26.3
60	19	1	20	...	2.38	21.7
5.18	14.94	...	79.33	0.55	0.54	4.1
2	19	...	79	...	0.54	4.1
3.7	19.6	...	76.7	...	0.60	5.5
13	14	...	73.	...	0.855	7.8
8.86	19.6	1.22	70.30	...	0.78	7.1
30	1	...	69	...	1.30	11.9
18	22	...	60	...	1.06	9.7
50	15	2	33	...	2.06	18.8
55	12	3	30	...	2.20	20
...	79.35	...	20.65	...	0.86	7.9

The replies indicate that the companies that are obtaining the best results in the life of their bearings are those which are using bearings with a base of tin and most of them attribute the result to this fact. Those whose armature bearings have only a short life (there are many which have a life of less than 10,000 km, or 6250 miles, some even are from 4000 km to 5000 km, or 2500 miles to 3125 miles) employ without exception anti-friction metal whose cost is not more than 1 fr. per kilogram, or 9 cents per pound. Of the 54 companies which replied to the question of price 36 are paying less than 2.50 fr. per kilogram, or 22.7 cents per pound; 8 between 2.50 fr. and 3.50 fr. (22.7 cents and 32.7 cents per pound); and 10 more than the latter figure.

*Abstract of a paper presented at the convention of the International Street & Interurban Railway Association at Munich, Sept. 7-10.

There is no doubt on the author's part that to obtain good results, bearings containing not less than 80 per cent tin should be used. A great deal of mystery has been thrown around anti-friction metals, especially of the proprietary kind. But the age of alchemy has passed. The life of a bearing is determined by its composition which, in turn, fixes the price. Metals with lead as a base naturally have a short life and in addition the danger of overheating. Moreover, the depth to which they can be worn is not so great as that of the bearings in which tin is used.

With a few exceptions all of the companies turn their bearings when renewed with anti-friction metal. It is well known that manufacturers cast theirs on a mandrel. This is possible with new motors and axles, but when an axle becomes worn, turning is necessary to fit the bearing to the axle.

A great variety of practice also exists as regards the lubricant used in motor and armature bearings, a subject quite as important as that of the question of the metal employed in the bearings. Of the 117 companies which replied to the data sheet of the association, 36 employed oil, 55 used grease of uniform character, 17 mixed grease, and 9 different types of lubricant depending upon the type of car. The tendency is undoubtedly in the direction of the use of oil and the Vienna Tramways Company reports that it is now possible for its motor cars to haul two trail cars on divisions where this could not be done when grease was used. Most companies would undoubtedly use oil for motor bearings if the motors in use were adapted to this kind of lubrication. Fortunately motors are now coming on the market constructed for oil lubrication, and this will avoid the necessity for the many ingenious methods devised for fitting existing motors with oil cups.

To conclude, the author believes as a result of his inquiry into this subject, that by proper lubrication and selection of bearing metal, an average life of from 50,000 km to 100,000 km (31,250 miles to 62,500 miles) should be secured from armature bearings. The life will naturally vary with the weight, condition of track, number of stops, etc.

AXLE BEARINGS AND CAR JOURNALS

In most cases the same method of lubrication is employed on the axle bearings as on the armature bearings, although some companies using grease on the former employ oil on the latter and vice versa. In general the principles which apply to armature bearings, i. e., the use of a white metal rich in tin and oil lubrication hold also for the axle bearings. At the same time the fact should not be ignored that the latter work under conditions much more favorable than those of the armature bearings. The weight per unit of surface is less, the speed is lower and the effect of braking is less severe. Moreover, these bearings are not exposed to the heat which is radiated from the armature to the armature bearings, and the effect of failure is less disastrous. Finally, axle bearings can be replaced much more easily than armature bearings, the time needed is often less than an hour and the work does not require special tools or the opening of the motor. For this reason there is less objection to using an axle bearing with a base of lead and employing lubrication of an inferior grade.

Comparatively little need be said about car journals because electric railway companies have the experience of the steam railroads to guide them and manufacturers of trucks have usually installed the same type of box used on steam railroad equipments. Oil is generally employed as a car journal lubricant and of the 117 companies replying to the data sheet, not over 5 use grease. In most cases the journals are lubricated by a wicking and the average life of the bearings is from 100,000 km to 150,000 km (62,500 miles to 93,750 miles). A new type of box, the Korbuly, has recently been adopted by a number of the companies. A feature of this box is that the wicking revolves so that the journal is practically in a bath of oil. Results so far have been very satisfactory, but before expressing a definite opinion it seems desirable to await the results of a trial on a larger scale.

LUBRICATION FOR GEARING

As the subject of gearings will be discussed in a paper to be presented at the convention by Mr. Stahl, of Dussel-

dorf, the subject will be discussed but briefly here. The data sheet indicates that of the 117 companies replying, 77 use grease often mixed with sawdust, oil or graphite. The addition of sawdust or graphite appears useful in reducing noise after the pinion has become worn. Thirty companies employ oil in the gear case and 12 a special preparation called "Ironsides," which covers the teeth with a protective film. This material is also on trial by a number of companies. To state the effect of the different lubricants on the life of the gears a few replies will be quoted.

Aix-la-Chapelle, Bâle, Berne and Bielefeld employ oil in spite of its higher cost. Bordeaux is satisfied with grease. Cologne reports that the wear on gearings is less with the use of oil. Frankfort has obtained good results by supplying the gear cases with a reservoir of oil and wool wicking, which feeds the oil on all sides and on top to the gears. Geneva and Genoa employ the same device. Hamburg reports excellent results with "Ironsides." The life of the gears on this road has been more than doubled, and at present amounts to 1,500,000 km (937,500 miles) for the gears and 363,000 km (225,000 miles) for the pinions. Königsberg and Leipzig have also obtained very satisfactory results from this lubricant, and it is being adopted at Lucerne. Mühlhausen reports a reduction of wear by replacing grease with oil. Munich is also using oil instead of grease. Oberhausen estimates that the life of the gears is doubled when oil is used instead of grease. Stuttgart has returned to the use of oil of an inferior quality without the addition of sawdust or graphite. Wiesbaden believes that the life of gears is doubled by the use of oil instead of grease. Vienna, Würzburg and Zurich have replaced grease with oil.

Conclusions, based upon all the replies received, can be summarized as follows:

(1) That grease is very effective in reducing the noise of the gears, especially when they are somewhat worn, owing to a defect in the mounting, or unequal wear in the two armature bearings so that the gear and pinion do not mesh properly. The addition of sawdust or graphite contributes to the reduction of noise.

(2) That purely as a lubricant grease is inferior to oil. Just as in bearings, the reduction of friction is obtained more easily by means of a liquid lubricant, like oil. Wicking, which furnishes a regular supply of lubricant, is preferable to a bath of oil.

(3) The results obtained with the patented lubricant, "Ironsides," are sufficiently interesting to warrant a continuation of the trials, provided it is possible to prevent the entrance of oil and grease from the armature bearings into the gear case, as their action has a bad effect on the lubricant.

CONCLUSIONS

As final conclusions of this study into the subject of lubrication, the author had hoped to establish a figure which in a measure would give the expenses of each class of service. The replies received, however, do not permit the establishment of such a characteristic figure. The only value which could be obtained would be the arithmetic mean of a large number of widely varying quotations. The practical utility of such an average is questionable. Each company is naturally endeavoring to reduce its expenses to the minimum. We believe, however, that in this course the first object of each company should not be to attempt to secure the lowest possible cost for lubrication, but to employ that method which is the most effective in reducing the wear of the parts in contact. That is to say, the company should not lose sight of the fact that lubrication is not the direct end sought, but the means for the preservation of the surfaces in contact.

Most of the companies use different lubricants in winter and summer service. This is necessary for solid and often desirable for liquid lubricants. A very few companies purchase lubricants on specifications and have sent copies of such specifications to the author. They are not reproduced, as in their technical features they do not differ greatly from those presented in an interesting report on the subject of lubrication by Mr. Rötelnmann, of Darmstadt, at the meeting of the German Street Railway Association held at Dusseldorf, in September, 1902.

News of Electric Railways

Traffic and Car-Mile Revenue of New York City Surface Lines

Figures have been given by the receivers of the Metropolitan Street Railway, of New York, to the New York Public Service Commission, First District, showing the revenue and transfer passengers carried by the New York City Railway and the car-miles run during the fiscal years ended June 30, 1907, and June 30, 1908. The statistics have been furnished in connection with the investigation into the abandonment of transfers on the Fifty-ninth Street crosstown line, which is now under way. The figures for the year ended June 30, 1907, were as follows:

Route, Electric lines.	Revenue passengers.	Transfer passengers.	Miles run by regular passenger cars.	Passenger revenue per car mile, cents.
2d Avenue.....	22,967,828	12,115,825	3,601,034	31.89
3d Avenue.....	35,831,251	13,381,280	5,370,327	33.36
Lexington Avenue.....	29,190,400	11,800,818	4,568,340	31.95
4th Avenue & Williamsburgh Bridge.....	495,934	129,343	95,379	46.97
4th Avenue.....	30,624,377	14,291,109	4,921,159	31.12
Grand Central & West 23d Street.....	2,116,250	768,899	228,746	46.26
Broadway & Columbus Avenue.....	43,160,556	11,987,450	4,628,138	46.63
6th & Amsterdam Avenues.....	29,703,062	13,788,132	4,528,073	32.80
7th Avenue.....	6,570,893	2,104,740	1,283,016	25.61
Canal Street.....	88,549	68,064	95,057	4.66
8th Avenue.....	27,796,097	13,911,244	4,230,815	32.85
9th Avenue.....	7,324,392	4,918,329	1,342,809	27.27
Kingsbridge.....	1,323,773	567,700	569,508	11.62
145th Street.....	329,598	167,321	85,011	19.39
125th Street.....	6,064,510	2,962,807	843,766	35.94
116th Street.....	5,574,033	5,296,279	807,058	34.53
86th Street.....	5,537,723	5,909,329	818,797	33.82
59th Street.....	7,205,108	12,634,556	1,058,185	34.04
34th Street.....	10,616,217	10,782,572	1,296,637	40.94
23d Street.....	18,057,683	12,040,600	1,819,357	49.63
14th Street.....	14,934,129	8,695,893	2,155,167	34.65
Christopher & East 23d Streets.....	4,422,733	2,442,666	660,443	35.50
53d Street.....	10,548	315,077	18,499	2.85
8th Street.....	10,543,395	3,471,573	1,529,462	34.47
Avenue A.....	327,835	107,792	210,431	7.79
Mt. Vernon.....	387,621	55,578	151,537	12.79
Total.....	321,205,305	166,414,976	46,916,448	34.23
Grand total.....	23,565,063	11,846,996	4,732,158	24.90
Total transfer and revenue passengers, 523,032,340.	344,770,368	178,261,972	51,648,606	33.38

The figures for the year ended June 30, 1908, show the following:

Route, Electric lines.	Revenue passengers.	Transfer passengers.	Miles run by regular passenger cars.	Passenger revenue per car mile, cents.
2d Avenue.....	22,001,747	12,980,743	3,688,775	29.82
3d Avenue (1).....	18,360,425	7,873,272	3,010,610	30.49
Lexington Avenue.....	28,636,766	12,277,133	4,793,996	29.87
4th Avenue & Williamsburgh Bridge.....	896,090	272,529	217,235	20.62
Grand Central & West 23d Street (2).....	1,263,511	432,905	158,215	39.63
4th Avenue.....	28,996,627	15,101,698	5,367,141	27.01
Broadway & Columbus Avenue.....	38,834,836	12,330,305	4,849,011	40.04
Broadway & Amsterdam Avenue.....	4,508,695	1,512,072	862,851	26.13
6th & Amsterdam Avenues.....	27,063,692	14,965,713	4,494,901	30.10
7th Avenue.....	2,029,419	846,746	453,102	22.39
Canal Street.....	98,556	113,607	96,213	5.12
8th Avenue.....	27,973,348	14,692,546	4,686,279	29.85
9th Avenue.....	6,768,165	4,836,389	1,345,091	25.16
Kingsbridge (3).....	964,371	424,542	383,047	12.59
145th Street.....	619,159	355,340	113,800	27.20
125th Street (4).....	3,210,322	1,729,290	483,394	33.20
116th Street.....	5,393,168	5,902,637	824,003	32.73
86th Street.....	5,349,867	6,115,521	899,830	29.73
59th Street.....	7,027,010	13,152,947	1,084,171	32.40
34th Street.....	10,599,233	11,452,475	1,392,156	38.07
23d Street.....	18,295,094	11,437,247	2,148,884	42.57
14th Street.....	15,922,202	8,377,525	2,583,622	30.81
Christopher & East 23d Streets.....	3,612,927	2,224,223	636,502	28.38
8th Street.....	9,786,875	5,409,519	1,563,734	31.30
53d Street (5).....	6,430	7,183	11,947	2.69
Avenue A (6).....	235,689	98,610	139,838	8.43
Mt. Vernon.....	418,954	55,673	153,838	13.62
Total.....	288,873,179	164,978,390	46,442,186	31.10

Horse lines.	Revenue	Transfer	Miles run by regular passenger cars.	Passenger revenue per car mile, cents.
6th Avenue.....	267,986	143,428	121,964	10.99
East Belt & 1st Avenue..	3,087,010	1,088,449	896,276	17.22
West Belt.....	4,497,300	1,503,942	858,799	26.18
17th & 18th Sts.....	63,443	53,022	46,766	6.78
Bleecker Street.....	5,071	851	18,523	1.37
Avenue C (Prince & Houston Streets).....	3,063,859	1,971,101	724,005	21.16
Met. Crosstown (Spring & Delancey Streets).....	2,434,667	1,571,219	415,416	29.30
Chambers Street.....	2,572,022	1,488,153	446,708	28.79
Fulton Street (7).....	443,864	180,333	586,885	25.54
28th & 29th Streets.....	2,939,582	1,468,891	568,149	25.87
Total.....	19,374,804	9,469,389	4,183,491	23.16
Grand total.....	308,247,982	174,447,779	50,625,677	30.44

Total revenue and transfer passengers, 482,695,761.

- (1) Third Avenue Railroad ceased to be operated by New York City Railway on Jan. 11, 1908.
- (2) Grand Central & Twenty-third Street line ceased to be operated by New York City Railway on March 1, 1908.
- (3) Kingsbridge line ceased to be operated by New York City Railway Company on March 1, 1908.
- (4) 125th Street line ceased to be operated by New York City Railway Company on Jan. 11, 1908.
- (5) Fifty-third Street line ceased to be operated by New York City Railway Company on March 2, 1908.
- (6) Avenue A line ceased to be operated by New York City Railway Company on March 2, 1908.
- (7) Fulton Street line ceased to be operated by New York City Railway Company on June 2, 1908.

The Cleveland Situation

Mayor Johnson has answered through the Cleveland Press a number of questions propounded by the Cleveland Leader regarding the whereabouts of the stock of the Municipal Traction Company. His statement is as follows:

"It is locked in three safety deposit vaults in the Citizens' Savings & Trust Company, the Cleveland Trust Company and the United Banking & Savings Company. It is endorsed in blank and is optional to the majority of the remaining stockholders or a majority of the survivors, so that death or bankruptcy could not take a share out of the hands of the majority of the Municipal stockholders."

Answering the question as to whether the stock is in the hands of trustees, Mayor Johnson said:

"Stockholders, as individuals, constitute the trustees, and they are pledged to receive no profit, but to hold it to be used, first, for improving the service; second, for reducing fares, and, third, for acquiring the property for the people. The lease contains all the provisions that the ingenuity of the best lawyers could provide to protect the public interests. If anybody has a better plan we would like to have them propose it. I think the Legislature ought and will permit the trusteeship to be placed in the entire voting population of our city."

After saying that the stock is trusted for the benefit of the people and that their interests are protected by the best plan that could be devised, he answers the question as to how the management will be chosen when he is no longer Mayor, as follows:

"Death or resignation only can remove directors of the Municipal Traction Company. Vacancies will be filled and successors chosen by the surviving members of the board. It will make no difference who is Mayor."

The assurance that a referendum vote on the street railway franchise will be taken on Oct. 22 has brought out a number of matters of importance that must receive consideration before that date. The one of greatest interest to the people is the disposition of the capital stock of the Municipal Traction Company. So persistent has been the demand for information on this point that F. H. Goff, who was arbitrator for the Cleveland Electric Railway in the settlement and who has always expressed faith in the sincerity and honesty of Mayor Johnson, felt it a duty to express his views on this point and also on the clause of the lease giving an option of purchase to the traction company in order that the people may know the weak points and insist that they be corrected before the vote is taken; or, in case of refusal to change these features, defeat the franchise at the polls. The statement prepared by Mr. Goff is as follows:

"I have at no time been satisfied with the manner in which the city's interests in this affair were protected. I believe that the city should have its interest in this property secured by contract rather than by verbal agreement or understanding, however good the faith of those entering into an informal agreement.

"Understand me in this. I do not in any way reflect upon the integrity or purpose of Mayor Johnson and his associates. On the contrary, I have every confidence in the

Mayor and his associates. I do not doubt the unselfishness of their aims, but I do realize that there are others who hold suspicions on this matter.

"It is absolutely necessary that all possible grounds for suspicion that Mayor Johnson and his associates are working for personal gain in the street railway control be removed. I know of no better way than to place the stock of the Municipal Traction Company securely in the hands of trustees with all revenue from that security to be devoted to the city hospitals, the city schools or other city institutions. Unless this step is taken I do not believe the franchise should be upheld by the people at the coming referendum election, but if it is done I believe the franchise should be carried. I believe the Mayor and his associates should take immediate steps to carry out such a plan.

"It is street talk that the stock has been placed in a safe-deposit box and that at least three directors were needed to gain access to it. Under what stipulations it was placed there I do not know, but whatever they are, they should be made public and their legality should be passed upon. From my understanding of the situation I doubt if the public is given proper security now.

"An objectionable feature of the settlement and one that I think ought to be corrected is the continuous option of the Municipal Traction Company upon the stock of the Cleveland Railway Company. It enables the Traction company at any time during the life of the lease to call the stock of the Railway company at 110. The effect of the option is to put a top on the market price of the stock beyond which it cannot go, because of its being at any time subject to a forced sale at that figure. It serves to prevent the marketing of stock of the company at as high a figure as might be possible were there no such limit on the market price. In that way it prevents the company from securing in the sale of its capital stock as large an amount of money as that to which it would be entitled otherwise. A stock which is subject to call at any time does not recommend itself to long-term investment, for holders have no means of telling at what time their investment will be disturbed. This serves to limit its marketability upon a low income basis.

"Provided the stock of the Municipal Traction Company has been trusted in such a way that the city is entirely safeguarded, there would probably be little objection to giving the Traction company an option on the stock at the end of the life of the franchise, 25 years. This would give a long term of years during which holders would not be disturbed in their investment.

"The 'free' stock exchange of the Municipal Traction Company should, I think, be abolished. The stock should be good enough to take full care of itself in the open market, and its price would then be regulated by the operation of the law of supply and demand. The value of any guarantee depends upon what is back of it, and if this guarantee is to be continued I think it proper that the public should be informed concerning the responsibility of the guarantor.

"Now that the whole matter has been brought formally by this election before the public, the opportunity is offered to make such corrections in the plan as experience and further consideration suggest. I believe that action to this end should follow at once in order that the people may be convinced that the property is as truly their own as are the water works. Until the stock of the Municipal Traction Company is permanently trusted in such a way as to remove all possibility of suspicion, such a sentiment of the public toward the property cannot be secured. If those in control are unwilling to do this, I think the public should refuse them the franchise."

To a representative of the ELECTRIC RAILWAY JOURNAL Mr. Goff said the foregoing statement represented his views and that he believed the stock of the Municipal Traction Company should be properly trusted, irrespective of what the Mayor has to ask of the people at this time in the way of a referendum vote. He said he felt that this is the only way in which the matter can be properly handled in carrying out the plan formulated when the properties were taken over on a leasing arrangement.

John A. Cline, attorney for the Union street railway officials and Republican candidate for prosecuting attorney of Cuyahoga County, stated that Mr. Goff's idea is entirely correct. Under the present arrangement, he said, in case Mayor Johnson should be defeated in politics he might feel that he had been badly treated and might decide to sell the control of the company, which would be worth a round sum, and retire from the struggle.

M. A. Marks, treasurer of the Cleveland Worsted Mills Company, and a prominent citizen of Cleveland, stated in an interview that he believed Mr. Goff to be correct in the stand he has taken and that the rights of the people should be safeguarded.

City Solicitor Newton D. Baker said that the fact that the City Council has the right to refuse a renewal of the underlying grant at the end of each 10-year period if the company does not carry out its promises faithfully is a good safeguard. Mr. Baker said that the corporation might be attacked from a legal standpoint if it allowed the stock to be trustee and that such a step would open the way to troubles that have not heretofore existed. He also objects to the elimination of provision that the stock of the old company may be purchased at 110, and says that this is a vital part of the plan.

A little speculation has been indulged in as to who would be the owners of the Forest City lines if the franchise should be voted down. By some it is claimed that the Cleveland Railway Company has bought the new road and that there would be no way of restoring it to the first owners. On the other hand, it is said to have been understood that if anything occurred to invalidate the franchise or lease that all properties are to be restored to their original owners and that the old conditions would prevail.

Cascade Tunnel Electrification.—Announcement is made that the Great Northern Railway will operate passenger trains through the Cascade tunnel by electricity before Jan. 1.

New Line Opened Between Fairmount and Barracksville, W. Va.—The Fairmount & Mannington Railroad, which is building an electric railway to connect Fairmount and Mannington, last week opened its line as far as Barracksville. The total length of the system when completed will be 15.3 miles.

Collision Avoided by Northern Ohio Traction & Light Company.—On the evening of Sept. 9 an attempt was made to wreck one of the large cars of the company by placing an obstruction, in the shape of ties, across the rails. The obstruction was discovered by the motorman in time for him to bring his car to a stop before a collision could occur.

Chicago Railways Reconstruction.—The Chicago Railways has decided to begin at once the reconstruction of 5½ miles of its roadbed in seven of the principal streets of the business district. The company already has spent \$3,000,000 in improvements, not including the cost of new cars and power work, this sum having been certified to by the engineering board.

Central Electric Railway Association Meeting.—In addition to the papers announced for the meeting of the Central Electric Railway Association at Indianapolis on Sept. 24, Amos J. Coover, Dayton, Ohio, will read a paper entitled "Railway Track Bracing," and Frederick H. Millener, Omaha, Neb., will read a paper entitled "The Mechanical Application of Wireless or Radio Telegraphy to Railroads."

Gasoline Road for Ohio.—The Youngstown & Lake Erie Railway, to be built between Youngstown and Conneaut, has filed a mortgage in favor of the Windsor Trust Company, of New York, to cover a bond issue of \$3,000,000, through which funds for the construction work will be secured. At present it is the intention of the promoters to operate with gasoline cars. John H. Ruhlman, Youngstown, is at the head of the enterprise.

Eight-Car Elevated Trains in Boston.—The Railroad Commissioners of Massachusetts have approved the plan of the Boston Elevated Railway to lengthen its station platforms so that eight-car trains can be operated during the rush hours. The stations at present accommodate only five-car trains. The Aldermen of Malden have, however, rejected the plan of the company for an elevated structure between Sullivan and Malden Squares on the ground that the work would injure the business center of the city.

Power Project for San Francisco.—Negotiations are understood to be pending by which the United Railroads, San Francisco, will secure control of the Stanislaus Electric Power Company. Securities of the Stanislaus Power Company have been purchased by Ladenburg, Thalmann & Company, New York, following the financial troubles of the Knickerbocker Trust Company, New York, and as Ladenburg, Thalmann & Company are interested in the United Railroads the plan is understood to provide for the enlargement of the purposes of the power company and for joint operation of the power plant and the railway. The original plans for the power company provided for the expenditure of between \$2,500,000 and \$3,000,000.

Meeting of Engineering Association Committee on Power Distribution.—The committee on power distribution of the American Street & Interurban Railway Engineering Association met at the Hollenden Hotel, Cleveland, Ohio, last week, to prepare its report to be made at the meeting of the

association at Atlantic City. Some time ago inquiry sheets were sent to a number of roads for information, suggestions and experiences along the line of work under consideration, in order that the report might have the broadest scope possible. About 70 replies were received. Those present were: W. J. Harvie, chairman, Utica, N. Y.; G. D. Nicholl, Rushville, Ind.; James Haywood, Philadelphia, Pa., and J. P. Boyden, Boston, Mass. W. H. Matthews, Denver, could not attend.

Annual Convention of National Association of Railroad Commissioners.—The twentieth annual convention of the National Association of Railroad Commissioners will be held in the rooms of the Interstate Commerce Commission in Washington, D. C., on Oct. 6. Among the principal subjects which will be reported upon will be rates and rate-making, legislation, railroad taxes and plans for ascertaining the fair valuations of railroad property, car distribution and car shortage. Other subjects to receive attention will be construction and operating expense accounts of electric railways, grade crossings, amendment of the act to regulate commerce, powers, duties and work of State railway commissions, railroad statistics, uniform classification, safety appliances, delays attendant upon enforcing orders of railroad commissions and demurrage and reciprocal demurrage.

River Tunnels to Be Constructed in Chicago.—Construction of a new La Salle Street tunnel and reconstruction of the Washington Street tunnel for the purpose of handling traffic now crowded upon inadequate bridges is announced by the board of supervising engineers as the next step to be taken in the rehabilitation of the street railways in the downtown district of Chicago. Although the tunnel work is connected intimately with the plan for a subway the board has decided that it is not in any way dependent upon the completion or even the beginning of the subway for its successful prosecution. Much preliminary work has been done, and both the engineers and the Chicago Railways Company are eager to go ahead as soon as definite information is received from the Council committee on local transportation, showing what streets it has elected to use ultimately for the subway. This is expected to be known soon, and then the last barrier to the prosecution of tunnel reconstruction will be out of the way.

Hearings on Matters Subject to Legislation in Massachusetts.—The Railroad Commissioners of Massachusetts will begin hearings in October on the important transportation matters with reference to which this year's Legislature asked them to make an investigation with recommendations. The purchase of the Bennington & North Adams Street Railway by the Berkshire Street Railway is likely to be considered. The Senate asked the commissioners to consider primarily the advisability of permitting this purchase, but incidentally it also asked for a recommendation as to what relations, if any, should be permitted between railroads and street railways in general. The object is to get the board to express an opinion with a view to such improvement and development of transportation facilities as has been made possible through the use of electricity. This opinion will be of considerable interest on account of the controversy between the Commonwealth and the New York, New Haven & Hartford Railroad and Boston & Maine Railroad with reference to the holding and control of electric railways by either or both of these companies.

Court Asked to Pass on New York Public Service Commission Act.—Justice Gerard, of the Supreme Court of New York, was called upon on Sept. 10 by A. C. Gubner, a taxpayer, for a preliminary injunction to restrain the New York City officials from paying out \$1,050,000, next year's estimated expenditure of the Public Service Commission of the First District of New York, at the request of the commission. The motion just made is asked pending the trial of the suit restraining the mayor, the controller or the city chamberlain from paying out further sums to the commission on the ground that the act creating the body is unconstitutional. While the act is attacked in many particulars, the motion just made was confined entirely to the point that the law creating the commission is unconstitutional. John Leary, counsel for Mr. Gubner, in support of his argument, quoted the case of the people against the supervisors of Chautauqua in 1870, in which Judge Folger, of the Court of Appeals, wrote the decision, which was unanimous. This decision declared the act unconstitutional because certain money was attempted to be collected from only a part of the citizens of the State. Justice Gerard remarked that he thought this decision backed up fairly well the argument of Mr. Leary and that he was only concerned in the question of what is law. In his opinion the matter was one that had far better be settled at once, and if the act was unconstitutional it ought to be declared so immediately. Referring to the Folger decision, Justice Gerard said: "I can't reverse the Court of Appeals and it does seem to me that the act falls within that decision."

Financial and Corporate

New York Stock and Money Markets

SEPT. 15, 1908.

The tendency of the stock market during the last week has been downward and the prices of many issues have declined. While every evidence exists that the general advance in stocks has been manipulated by strong hands, no opposition has been raised by those behind the market to temporary reactions. When profit-takers or others desired to sell little support was given to prices. Some few specially favored issues have advanced in the last week, but the tendency with most securities has been to show the effect of some pressure to sell. This tendency, however, has done nothing to impair the perfect confidence that seems to exist in the ability of those who are behind the movement to put the market to any point that may be desired.

Good crop reports, the announcement that the pig iron product for August had exceeded that of any other month for a year, the further reduction on the number of idle cars and the decision declaring unconstitutional the "commodities clause" of the Hepburn act were all distinctly bullish arguments. The increased rate for money and the rapid advance in the price of foreign exchange might easily have been interpreted as bearish influences. None of these developments, however, seemed to have the slightest effect, and there is no evidence that wholesale liquidation by large interests is in progress. In fact, the quantity of stock in sight seems far too limited for such to be the case. Reactions are therefore considered temporary.

The advance in the price of money is in reality a hopeful sign in spite of its theoretical bear value. There is too much money in sight for any stringency to be possible for a long time to come and the fact that the demand has increased shows that business is improving. The advance in foreign exchange has caused talk of gold exports. The stock market closed weak at general declines on Sept. 15. Money was quoted at $1\frac{1}{2}$ @2 per cent for call loans and $2\frac{3}{4}$ @ $3\frac{1}{4}$ for 90-day funds.

Other Markets

Philadelphia Rapid Transit continued to be the active issue in the Philadelphia trading, large blocks changing hands. The fully paid stock is selling at $20\frac{3}{8}$ to $20\frac{7}{8}$. There was also some pressure to sell other traction issues, Union Traction selling at $46\frac{3}{4}$ to 47. Consolidated Traction of New Jersey was traded in at $68\frac{1}{4}$.

In the Boston market, Massachusetts Electric preferred displayed some strength and touched 51, the highest point of the year. Two hundred shares of Boston Suburban were sold on Sept. 15 at $10\frac{3}{4}$. The preferred was quoted at $54\frac{3}{4}$.

Traction issues were stronger in the Chicago market, especially the bonds. Chicago Railways 4 per cent, series B, sold up to $81\frac{3}{8}$ and series A advanced to 90. The 5 per cent bonds sold at 99 $\frac{3}{8}$. City Railway 5s sold at $101\frac{1}{4}$ and South Side "L" $4\frac{1}{2}$ s advanced to $93\frac{1}{2}$.

In Baltimore United Railway bonds continued to be the most active issue, fairly liberal sales of the 4s being made at 85. Knoxville Traction 5s sold at 104 and Pittsburg United Traction 5s at $104\frac{3}{4}$. Trading in the stocks was light.

Washington, Baltimore & Annapolis was the feature on the Cleveland Stock Exchange, many blocks of the pooling certificates having changed hands at figures ranging from $11\frac{1}{2}$ to $11\frac{7}{8}$. Owing to the uncertainty caused by the approaching referendum vote, Cleveland Railway stock has declined and there is no inclination to buy, although it has been offered more than two points below 90.

Quotations for various traction securities as compared with last week follow:

	Sept. 8.	Sept. 15.
American Railways Company, Philadelphia.....	44 $\frac{1}{2}$	44 $\frac{1}{2}$
Boston Elevated Railway.....	135 $\frac{1}{2}$	134
Brooklyn Rapid Transit Company.....	54 $\frac{3}{8}$	51 $\frac{1}{2}$
Chicago City Railway.....	a180	a180
Cleveland Railway.....	—	88
Consolidated Traction Company of New Jersey.....	a69	a69
Consolidated Traction Company of New Jersey, 5 per cent bonds.....	a104	a104
Detroit United Railway.....	40 $\frac{1}{2}$	38
Interborough-Metropolitan Company.....	11 $\frac{1}{2}$	11 $\frac{1}{8}$
Interborough-Metropolitan Company (preferred).....	33 $\frac{1}{2}$	32 $\frac{3}{8}$
Manhattan Railway.....	138	135
Massachusetts Electric Companies (common).....	9	9 $\frac{1}{2}$
Massachusetts Electric Companies (preferred).....	47	49
Metropolitan West Side Elevated Railway, Chicago (common).....	a15	a15
Metropolitan West Side Elevated Railway, Chicago (preferred).....	a46	a46
Metropolitan Street Railway.....	29 $\frac{1}{2}$	30
North American Company.....	63 $\frac{1}{2}$	64
Philadelphia Company, Pittsburg (common).....	39	39 $\frac{1}{2}$
Philadelphia Company, Pittsburg (preferred).....	40	40
Philadelphia Rapid Transit Company.....	14 $\frac{1}{4}$	30 $\frac{3}{8}$
Philadelphia Traction Company.....	89	*88 $\frac{1}{4}$
Public Service Corporation, 5 per cent collateral notes.....	a98	a98
Public Service Corporation, certificates.....	a71	a71
Twin City Rapid Transit Company, Minneapolis (common).....	89 $\frac{1}{2}$	86
Union Traction Company, Philadelphia.....	48	47

u Asked. * Last sale.

Huntsville, Chattanooga & Birmingham Interurban Railway, Light & Power Company, Huntsville, Ala.—The property of the Huntsville Railway, Light & Power Company, recently purchased by E. L. Pulley and associates, of Huntsville, has been transferred to the Huntsville, Chattanooga & Birmingham Interurban Railway, Light & Power Company, recently incorporated.

Philadelphia, Bristol & Trenton Street Railway, Philadelphia, Pa.—This company, which defaulted on Sept. 1 in the payment of interest on its \$650,000 bonds (guaranteed by the Holmesburg, Tacony & Frankford Railway), has been placed in the hands of Charles L. Baum and Samuel Crothers, Jr., as receivers. The entire capital stock of the company is owned by the United Power & Transportation Company, which in turn is controlled by the Interstate Railway Company.

Philadelphia (Pa.) Rapid Transit Company.—Payment of the final assessment of \$7.50 a share on the stock of the Philadelphia Rapid Transit Company was made on Sept. 8. The assessment on the 600,000 shares was \$4,500,000. The stock is now full paid, \$50 a share, or a total of \$30,000,000. There have been nine separate assessments, beginning in 1902, when the company was organized. The first seven installments were for \$5 each. The last two, for \$7.50 each, were announced in the summer of 1907. It is understood that more than \$10,000,000 of this capital, together with the proceeds of the \$10,000,000 Market Street Elevated 4 per cent bonds, have gone directly into the construction of the elevated-subway line.

Pittsburg & Allegheny Valley Railway, Leechburg, Pa.—On application of Hosack, Knox & Hosack, the Safe Deposit & Trust Company, Pittsburg, has been appointed receiver of the Pittsburg & Allegheny Valley Railway. It is expected the trustee will enter suit within the next few days for foreclosure of the mortgage. The company in July, 1904, executed a trust deed under which the Real Estate Trust Company, Philadelphia, was appointed trustee for the bond issue, amounting to \$1,100,000. The trust company recently resigned from the responsibility imposed on it. The railway company recently failed to meet the interest on its bonds.

Roanoke (Va.) Traction & Light Company.—It is stated that the Roanoke Traction & Light Company will issue \$3,000,000 bonds, with the Baltimore Trust & Guaranty Company as trustee. The company was recently incorporated with \$2,000,000 authorized capital stock and has purchased the stock and bonds of the Roanoke Water Power Company and the James River Water Power Company. The plan is said to contemplate the consolidation eventually of these properties with those of the Roanoke Railway & Electric Company and the Roanoke Heat, Light & Power Company.

Second Avenue Railroad, New York.—The Guaranty Trust Company, which has a foreclosure suit pending against the Second Avenue Railroad because of default in the payment of interest on a mortgage dated Jan. 20, 1898, on Sept. 15 asked Judge Lacombe to appoint George W. Linch, former president of the Dry Dock, East Broadway & Battery Railroad and at present general manager of the Belt Line, as a separate and independent receiver for the road now in the hands of Joline and Robinson, receivers of the Metropolitan Street Railway. It was intimated to Judge Lacombe that the present receivers are not disposed to continue the operation of the Second Avenue Railroad and are mingling its rents, issues and profits into another and larger fund, which is being used for the betterment and operation of other lines composing the surface railroad system. The Guaranty Trust Company asserted that this being the case the appointment of a separate and independent receiver for the road about to be foreclosed is necessary so as to protect its interests under the mortgage. Judge Lacombe reserved decision.

Scioto Valley Traction Company, Columbus, Ohio.—A special meeting of the stockholders of this company has been called for Sept. 22 to vote upon a proposition to issue \$300,000 first preferred stock.

Twenty-eighth & Twenty-ninth Streets Crosstown Railroad, New York.—The bondholders' protective committee of the Twenty-eighth & Twenty-ninth Streets Crosstown Railroad has engaged the firm of Ford, Bacon & Davis to make an examination of the condition of the property.

Virginia Passenger & Power Company, Richmond, Va.—Notice is given that more than 55 per cent of all the securities for which provision is made in the reorganization plan of the company dated Aug. 1, 1908, having been deposited, the reorganization plan and agreement was declared operative as of Sept. 4. The time for depositing securities has been extended to and including Oct. 15, after which date no securities will be received for deposit except subject to such restrictions as may be imposed by the committee.

Traffic and Transportation

Passenger Traffic on Chicago Elevated Railways for August

The elevated railway companies of Chicago report the following statistics of passengers carried:

NORTHWESTERN ELEVATED RAILROAD.				
	1908.	1907.	Increase.	Per cent.
January	100,392	88,632	11,700	13.27
February	102,182	88,435	13,747	15.54
March	103,130	89,347	13,783	15.42
April	103,569	90,134	13,435	14.90
May	105,001	94,204	10,797	11.46
June	109,107	99,051	10,056	10.51
July	99,463	91,542	7,921	8.65
August	100,307	93,174	7,133	7.65

SOUTH SIDE ELEVATED RAILROAD.				
	1908.	1907.	Increase.	Per cent.
January	112,702	92,411	20,296	21.96
February	111,927	96,094	15,833	16.47
March	114,891	100,226	14,665	14.63
April	117,885	103,152	14,733	14.28
May	119,313	109,880	9,433	8.58
June	125,876	115,686	10,190	8.81
July	114,362	111,966	2,396	2.13
August	112,665	113,847	*1,182	*1.04

METROPOLITAN WEST SIDE ELEVATED RAILROAD.				
	1908.	1907.	Increase.	Per cent.
January	141,564	150,165	*8,601	*5.72
February	145,427	154,443	*9,016	*5.83
March	145,339	154,799	*9,451	*6.10
April	146,638	156,275	*10,363	*6.16
May	145,117	151,423	*6,306	*4.16
June	144,361	148,518	*4,157	*2.79
July	131,152	135,779	*4,627	*3.47
August	128,678	136,517	*7,839	*5.74

*Decrease.

Opinion of Indiana Commission on Handling of Baggage by Interurban Lines

The Railroad Commission of Indiana has made a ruling in regard to the handling of baggage by interurban electric railways. The opinion was written by Commissioner William J. Wood in response to a request from an electric railway company, and is as follows:

"Your letter of Aug. 6, inquiring whether the excess baggage act of 1907, chapter 123, page 196, of the acts of 1907, applies to interurban as well as steam lines, was received and has been considered by the commission.

"I am directed to reply that it is clear that such act does apply to interurban railroads. The prescription of the first section defining the application of the statute is: 'That each common carrier in this State which shall engage in the carriage of passengers by railroad between points in this State shall receive and transport and, etc.'

"The words used here are very broad and clear and contain no possible suggestion that the act has not intended to refer to traction lines. It is not said 'that any railroad or any steam railroad,' but it is said that each common carrier, whose business it is to carry passengers from one point to another in this State, shall do what is afterward required by the act, and we cannot conceive any construction, as far as these words are concerned, which would limit the application of the act to steam railroads.

"We have noted the provision of the act at the end of the first section, which is in these words: 'Provided, that such carrier shall be required to carry baggage only on trains equipped with the baggage cars.'

"We think that this proviso was intended only for the purpose of exempting from the act such trains as carry mail or express or freight only, for the convenience of the public, adding a passenger coach and carrying passengers. In other words, this proviso was not intended to define the application of the act or to limit the application to carriers whose trains were generally equipped with baggage cars, but its sole purpose was to except certain trains which in some cases, for the convenience of the people, carried passengers without baggage. By the terms of the act, in their ordinary meaning, it must be taken to include all common carriers by railroads in this State. But inasmuch as penalties are prescribed, the proviso in the first section expressly exempts from the operation of the act such trains as are not equipped with baggage cars or with facilities to carry baggage.

"For the reasons given we answer your question in the affirmative and recommend that your company, if it has not done so, shall hereafter be governed, in the matter of excess baggage, by this statute."

Speed Record on the Western Ohio Railway.—An extra car on the Western Ohio Railway on Sept. 8 made the run between Wapakoneta and Bluffton, 30 miles, in 35 min., including a slow-down through Lima.

Freight Franchise Granted in Gardner, Mass.—The Gardner, Westminster & Fitchburg Street Railway has been granted a franchise to carry freight on its line in Gardner.

Collision on Chester Traction Company's Line.—Twenty-two persons were injured in a head-on collision on Sept. 9 between cars of the Chester (Pa.) Traction Company between Penrose Ferry bridge and Model Farms.

Brooklyn Company Discontinues Summer Schedules.—The summer schedules on the lines of the Brooklyn Rapid Transit Company to the seaside resorts were discontinued on Sept. 7, except on the lines to Coney Island, where the heavy service will be maintained until the close of the Mardi Gras festival on Sept. 19.

More Limited Trains Between Indianapolis and Louisville.—The Indianapolis & Louisville Traction Company has placed two additional limited trains in operation between Louisville and Indianapolis. This doubles the number of limited trains between these cities over the Indianapolis & Louisville Company's line.

Collision on Brooklyn Elevated Railway.—In a rear-end collision on the Myrtle Avenue elevated line of the Brooklyn Rapid Transit Company on Sept. 11 the motorman of one of the trains lost his life and 25 persons were injured. On a steep up-grade a stalled train was rammed by another train, which had been signalled to stop.

Northern Ohio Traction & Light Company Increases Service.—Although the winter schedule has gone into effect, this company is operating seven limited cars between Cleveland and Akron and Canton to care for the business offered. In all, five new coaches have been put into service within the last few months on the limited runs.

Washington Commission Investigating Street Railway Operation in Various Cities.—The District Electric Railway Commission of Washington, D. C., has addressed letters to the mayors of important cities, the heads of street railways in the more important cities and State and municipal railway commissions asking for information about the operation of the street cars in the territory covered by each official.

Sunday Cars in Canada.—The city of London, Ont., will hold an election in January on the question of operating cars on Sunday. The London Street Railway is controlled by the Everett-Moore syndicate, of Cleveland, which is anxious to meet the demand for service on the first day of the week. Sunday operation of cars is now permitted in Toronto and Montreal, but it is barred in other Canadian cities.

Excellent Record Handling Traffic in Chicago Labor Day.—Not an avoidable accident was reported on the lines of the Chicago City Railway or the Chicago Railways Company for Sept. 5, 6 and 7, despite the heavy traffic. Millard B. Hereley, city traction expert, congratulated T. E. Mitten, president of the Chicago City Railway, and John M. Roach, president of the Chicago Railways Company, on the result in letters addressed to them individually.

Trolley Mail Earnings in New England.—In connection with the quadrennial weighing of mail now in process in the New England railway mail service, the statement is made that during the last year \$20,000,000 was paid by the government to the railroads for carrying the mail in New England. The trolley companies do not come within the railway mail service, but were paid \$106,000 for mail carrying. Of this sum \$72,000 went to the Massachusetts companies.

Washington Company Seeks Opinion on Special Rates for School Tickets.—Sales of tickets on the city lines of the Walla Walla Valley Traction Company, Walla Walla, Wash., at a special rate to school children under 16 years of age, have been discontinued, pending an opinion from the Interstate Commerce Commission regarding the discrimination in allowing school children 33 fares for \$1, and excluding working children of the same age from taking advantage of the reduced rate.

Shuttle Service on Boston Elevated Railway.—It has practically been decided by the Boston Elevated Railway to maintain elevated train service between the Atlantic Avenue division and the Pleasant Street incline of the present subway after the opening of the new Washington Street tunnel. A shuttle train will probably be operated between the North and South stations by way of Atlantic Avenue, but some of the trains will run through to Pleasant Street as at present. The details of the Pleasant Street shuttle terminus have not yet been decided, but the plans contemplate a transfer between the restored subway surface cars and the trains at the south entrance of the Tremont Street subway.

Application for Reduction in Fares on Rochester, Sya-

cuse & Eastern Railway.—Residents of Fairport, N. Y., have applied to the Public Service Commission for the Second District of New York for a reduction in fare by the Rochester, Syracuse & Eastern Railway. The fare is 15 cents for one way or 25 cents for the round trip from Fairport to Brighton, with an additional fare in Rochester. Commutation books of 50 tickets are sold for \$5. The schedule of rates charged at other places on the line was cited to show that the Fairport-Rochester rate is excessive. The commission reserved decision.

New Transfer Methods in San Francisco.—Charles N. Black, general manager of the United Railroads, San Francisco, is working on a new transfer system which will probably be introduced on Oct. 1. Instead of transferred passengers relinquishing their transfer to the conductor of a connecting car they will have the conductor punch the transfer should they desire to travel on a crosstown or terminal line. The system is in partial operation on the Fillmore, Kearny and Ninth Streets crosstown lines. Directions will also be printed on the reverse side of the transfer telling patrons where transfers can be used.

Change in Utica & Mohawk Valley Railway Timetable.—The summer timetable has been discontinued on the Utica & Mohawk Valley Railway. Cemetery cars now run only to the West Shore Railroad. All Summit Park and Yorkville cars are also discontinued. New York Mills cars leave Genesee Street every 15 min. from 5:22 a.m. to 7:52 p.m., then every 30 min. to 12:22 a.m. Whitesboro cars leave Genesee Street every 15 min. from 5:15 a.m. to 8:15 p.m., then every 30 min. to 12:15 a.m. On Saturdays and Sundays only New York Mills and Whitesboro cars run every 15 min. to 12:22 a.m. and 12:15 a.m., respectively. Rome and Little Falls cars run every 10 min. on Sundays.

Provision for Heavy Traffic at Monongahela City.—The Pittsburg Railways increased the service on the Charleroi line to handle the large crowds at the Old Home Coming celebration of Monongahela City, beginning on Sept. 7. The regular half-hour service was continued at Allenport from 6 p.m. to 10 p.m., at Charleroi from 6:15 p.m. to 10:15 p.m., and at Monongahela City from 6:53 p.m. to 10:53 p.m. In addition during the day on the regular half-hourly runs cars were operated in as many sections as necessary properly to care for all those who went from Pittsburg or other points in the Monongahela Valley to Monongahela City. Special inspectors were stationed at various important points in the valley to facilitate the movement of traffic.

Effect of Grand Army Meeting on Traffic at Toledo, Ohio.—The earnings of the Toledo Railways & Light Company during the week of the national encampment of the Grand Army of the Republic serve as an example of the value of conventions and large gatherings in increasing street railway revenues. From Aug. 30 to Sept. 4, inclusive, the total passenger revenue was \$49,136.51, an increase of \$16,140.63 over the same period last year. On the day of the parade the number of revenue passengers was 210,212 and the number riding on transfers, 33,846, making a total of 244,108. The receipts for this day were \$10,183.88, an increase of \$6,205.64 over the corresponding day in 1907. The number of cash passengers carried during the six days was 911,545 and the number of passengers carried on transfers was 205,811, making a total of 1,117,356. The company agreed in advance to donate to the encampment committee 10 per cent of the returns from increased business. This amounted to \$1,614.40, of which \$1,500 was paid before the encampment took place.

Elevated Train Over the Williamsburgh Bridge.—The Brooklyn Rapid Transit Company began operating elevated trains over the Williamsburgh Bridge to the Delancey Street terminal, Manhattan, on Sept. 16. It is believed by the officers of the company that this additional means of transportation from the east side of Manhattan to the eastern district of Brooklyn and to Cypress Hills, East New York, Woodhaven, Brownsville and Canarsie will bring about a general change in the routes of travel on the elevated system and relieve surface car congestion. In addition to affecting the surface traffic there will probably be changes at points where traffic is interchanged between surface and elevated lines—particularly the elevated lines operating between Park Row and East New York. It is anticipated that many persons using the Myrtle Avenue line to and from Park Row will transfer at Broadway to Delancey Street trains. A similar effect is expected on the Lexington Avenue line. Three regular routes will be operated from the new Delancey Street terminal—to Cypress Hills, to Canarsie and to Eastern Parkway. These lines will provide an excellent through service, and their operation through Broadway will greatly increase the provision there made for accommodating local traffic and facilitate transfer traffic, including the Fulton Street elevated line, at East New York.

Personal Mention

Mr. F. L. Fuller, president of the New York & Queens County Railway Company, is planning to take a trip abroad for several months. Mr. W. O. Wood, who has just been elected vice-president and general manager of the company, will have charge of the operation of the road.

Mr. E. J. Ryon has resigned as superintendent of the Schenectady (N. Y.) Railway and will devote his attention to other business enterprises in which he is interested. Mr. Ryon will be succeeded in the Schenectady Railway by Mr. George L. Radcliffe, for many years general superintendent of the Cleveland Electric Railway.

Mr. Horatio A. Foster has resigned from the engineering force of Mr. L. B. Stillwell and has become connected with the Evaluation Department of the Public Service Commission, First District, New York, where he will be engaged upon the appraisal of the street railway systems of New York which is to be conducted by Mr. B. J. Arnold. For the last year and a half Mr. Foster has been resident engineer in Baltimore for Mr. Stillwell and as such has had charge of the reconstruction of the power station of the United Railways & Electric Company of that city and other work upon which Mr. Stillwell has been engaged under his contract with the United Railways & Electric Company.

Mr. L. E. Fischer has resigned as general manager of the Illinois Traction System, to take effect Jan. 1, and Mr. H. E. Chubbuck, general manager of the Illinois Valley Railway, Ottawa, Ill., has been appointed as his successor. Mr. Fischer became connected with the Illinois Traction System in 1901 as superintendent of the power house of the company at Danville. In 1902 he was appointed manager of the property at Danville and after three years' service in that city was appointed to the position from which he has just resigned. During Mr. Fischer's connection with the Illinois Traction System many improvements and extensions to the system were made and the property was practically developed to its present state of excellence. It is understood that Mr. Fischer will devote his energies to several outside enterprises in which he is interested.

Mr. C. A. Alderman has been appointed chief engineer of the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., to succeed Mr. E. M. De Bruin, resigned, who has become connected with the L. E. Myers Company, Chicago. Mr. Alderman has recently been connected with J. G. White & Company, Inc., New York, whose employ he entered after resigning as chief engineer of the Cincinnati Northern Traction Company. Mr. Alderman has had an extended electric railway experience. During the two years he was with the Cincinnati Northern Traction Company he conducted the work of reconstructing, straightening and placing on a private right of way the old electric railway between Cincinnati and Dayton. Mr. Alderman also had charge of the construction of the Lima & Leipsic line, 26 miles long, and the Lima & Toledo line of the Cincinnati Northern Traction Company. Previous to his connection with the Cincinnati Northern Traction Company and the Morgan-Dolan-Schoeff syndicate, Mr. Alderman was chief engineer and manager of the Appleyard lines in Wisconsin and Ohio, and a part of the Tucker-Anthony lines in Ohio for eight years.

Mr. W. O. Wood has been elected vice-president and general manager of the New York & Queens County Railway, of Long Island City, and general manager of the New York & Long Island Traction Company and of the Long Island Electric Railway Company, which control interurban lines operated in connection with the New York & Queens County Railway Company. To accept this position Mr. Wood resigned that of operating statistician of the Interborough-Metropolitan Company, with which he had been connected for about a year following his resignation from the Brooklyn Rapid Transit Company in 1907. During this year Mr. Wood's headquarters have been at the office of the president, Mr. T. P. Shonts, at 115 Broadway. During Mr. Wood's connection with the Brooklyn Rapid Transit Company, which extended from 1903 to 1907, he was for the first three years superintendent of the elevated lines of the company and for the last year assistant general superintendent. Mr. Wood went to Brooklyn from Detroit, where from 1900 to 1903 he was superintendent of the Rapid Railway System of the Detroit United Railway Company. Previous to his service in Detroit, Mr. Wood was for 10 years associated with the Illinois Central Railroad as train master and secretary to Mr. J. T. Hara-han. On the Long Island City system Mr. Wood will have active charge of the operation.

Construction News

Construction News Notes are classified under each heading alphabetically by States.

An asterisk (*) indicates a project not previously reported.

FRANCHISES

Burlingame, Cal.—H. W. Hagen has applied to the City Trustees for an electric railway franchise along East Lane, thence down Howard Avenue to the beach.

San Diego, Cal.—It is stated that an application will shortly be made by the South San Diego Investment Company to the Board of Supervisors for a street railway franchise to connect the other lines now under construction at the head of the bay with Oneonta.

Huntingburg, Ind.—The Town Council has granted a franchise to the Ferdinand Electric Railway to enter Huntingburg. The company will soon engage upon the work of constructing a line from Huntingburg to Ferdinand through Dubois County. The length of the road will be 7 miles. [E. R. J., Sept. 5, '08.]

Iowa City, Ia.—The City Council has granted Henry Negus and A. J. Hamiel, in behalf of the Rundell Land & Improvement Company, a franchise for a street railway in Iowa City. The length of the system will be 5 miles. [E. R. J., Sept. 5, '08.]

Mineola, N. Y.—The Nassau County Board of Supervisors has granted the application of the New York & North Shore Traction Company for a franchise to construct and operate a street railway along Broadway, Hicksville, from John Street, southerly to the Long Island Railroad, and has also given consent to the crossing of the Roslyn road opposite Clinton Avenue in the village of Mineola.

New York, N. Y.—The New York, Westchester & Boston Railway has asked the city to extend the time for the completion of the four-track road from the city line to 174th Street to Aug. 2, 1911, and from 174th Street to the Harlem River to Aug. 2, 1913.

Charlotte, N. C.—It is said that the newly incorporated Charlotte Power Company will apply at the October meeting of the Board of Aldermen for a franchise to enter Charlotte with an electric street railway. [E. R. J., Aug. 15, '08.]

Springfield, Ohio.—The Ohio Electric Railway has asked the City Council for an extension of one year's time in which to complete its interurban station.

El Reno, Okla.—The El Reno Interurban Railway has asked for a five-year extension of its franchise and will bear the expense of a special election to decide this question. [E. R. J., Sept. 5, '08.]

***Wellsboro, Pa.**—W. A. Selts, of Jersey Shore, Pa., has applied for a franchise to build a street railway system on the streets of Wellsboro and to extend to Mansfield. The company will be known as the Tioga Traction Company and will enter Mansfield by way of Wellsboro Street, with a terminal at the corner of Main Street. A 50-year franchise is desired, with permission to construct a switch at the intersection of Wellsboro Street and Morris Avenue.

Knoxville, Tenn.—The Knoxville Railway & Light Company has just been granted a franchise to double-track its line on Central Street from the junction of Broadway to the corporation line.

Brownwood, Tex.—The City Council has granted W. S. Walker, of Granbury, Tex., a 30-year franchise for a street railway in Brownwood. The line will be built from the Frisco depot to the court house, thence to the Santa Fé depot and to the Coggin addition and return. [E. R. J., July 11, '08.]

Ogden, Utah.—The Oregon Rapid Transit Company has applied to the Board of County Commissioners for a franchise for an extension of its lines through Ogden canyon to Huntsville and intermediate points.

Bellingham, Wash.—The Whatcom County Railway & Light Company has applied for a franchise for a line on North Street, from the intersection of Dock to Yew Streets, a distance of about a mile.

Spokane, Wash.—The Spokane & Inland Empire Railroad has filed an application with the Board of County Commissioners for a franchise to run its line on First Avenue east of the city limits for a mile and a quarter. This is an extension of the new line which is to pass the fair grounds.

Walla Walla, Wash.—The Washington & Oregon Traction Company has been granted a franchise to build a street railway system in Walla Walla. The company proposes to

build a line south, possibly extending to Pendleton. [S. R. J., May 30, '08.]

RECENT INCORPORATIONS

Huntsville, Chattanooga & Birmingham Interurban Railway, Light & Power Company, Huntsville, Ala.—This company has been incorporated in Alabama to construct a street railway from Huntsville to the fair grounds via South Huntsville. Branches will also be built to Chattanooga and Birmingham. Capital stock, \$50,000, of which \$31,000 has been paid in. Incorporators: Mrs. J. V. Lowry, president; Dr. William J. Pulley, New York, vice-president; N. O. Wallace, Fayetteville, secretary; Charles H. Pulley, Huntsville, treasurer; Ed L. Pulley, Huntsville, general manager. [E. R. J., Aug. 29, '08.]

***Fort Smith-Oklahoma Light & Traction Company, Fort Smith, Ark.**—Chartered with a capital stock of \$30,000 to build and equip electric railways. Incorporators: P. K. Reiss, president; J. S. Lowrey, vice-president; E. H. Thomas, secretary; Rudolph Ney, treasurer; C. P. Wilson.

***Sparks Western Railway, Atlanta, Ga.**—This company has applied for a charter to build a line 25 miles in length, from Sparks, in Berrien County, to Moultrie, in Colquitt County. Capital stock, \$100,000. Incorporators: John R. Barfield, R. L. Wilson, W. J. Rogers, H. C. McDaniel, B. Z. Whitehurst, Jr., M. Studstill, J. S. Sirmans, F. C. Adams, W. J. McKinney, A. J. Whitehurst, S. G. Ethridge.

***Galesburg, Aledo & Northwestern Railroad, Galesburg, Ill.**—This company has been incorporated to build an electric railway from Galesburg in a west and north direction, through the counties of Knox, Warren and Mercer, to Aledo, and from there through the county of Rock Island to Rock Island, Ill., and Muscatine, Ia. Capital stock, \$100,000. Incorporators: Lafayette Weinberg, G. B. Churchill, F. W. Latimer, B. F. Arnold, E. R. Drake, Charles L. Hibbard, C. F. Purburgh, Lake W. Sanborn, Thomas W. Peterson.

***Saline County Traction Company, Springfield, Ill.**—Incorporated in Illinois to construct an electric railway from Eldorado through Harrisburg to Carriers Mills. The new line will cover a distance of 17 miles. Principal office, Danville, Ill. Capital stock, \$5,000. Incorporators: L. E. Fischer, Danville; J. A. Swanberg, Springfield; W. L. Murphy, Danville; L. W. Johnson, Danville, and A. C. Murray, Springfield.

***Des Moines, Council Bluffs & Western Railway, Des Moines, Ia.**—This company has been incorporated to build a line from Council Bluffs to Des Moines, with an extension to Muscatine. Capital stock, \$100,000. Office, Des Moines. Incorporators: Robert Pilmery, Norwalk, Ia.; N. W. Hansen, Haslith, Ia.; R. S. Bannister, Des Moines, and A. P. Sawyer, of Pierre, S. D.

***Turkeyfoot Traction Company, Akron, Ohio.**—Application has been made by this company for a charter to build an electric railway between Akron and Massillon, passing by the lakes south of Akron, from one of which it gets its name. Directors: Thomas L. Childs, Charles Esselburn, Charles J. Carey, Frank Ream and D. W. Ruesegger.

Rogue River & Oregon Southern Railway, Grant's Pass, Ore.—Incorporated in Oregon to build an electric railway from Grant's Pass, Ore., on the main line of the Oregon Railroad & Navigation Company, to Waldo, about 50 miles. An office will be maintained at Grant's Pass, but the principal office will be at Seattle, Wash. Capital stock, \$1,000,000. Incorporators: O. S. Blanchard, Glenville A. Collins and H. B. Buddenborg, all of Grant's Pass, Ore. [E. R. J., Aug. 15, '08.]

TRACK AND ROADWAY

***Fayetteville, Ark.**—J. R. Ahlefeld, of Leroy, Kan., is reported to be interested in a project to construct a street railway in Fayetteville with branches to Huntsville and Siloam Springs.

Fresno, Hanford & Summit Lake Railroad, Hanford, Cal.—Organization of this company has been practically effected by the election of the following officers: L. A. Nares, Laton, president; F. S. Granger, vice-president and general manager; J. D. Biddle, Hanford, secretary; H. A. Beekhuir, Hanford, treasurer, and W. J. McCoy, auditor. The company proposes to build an electric railway from Hanford to Fresno. It is said that all money necessary to go ahead with the work of construction has been subscribed. It has been decided to extend the road from Laton, which will be on the main line, to Summit Lake. The company will soon be incorporated with a capital of \$1,000,000.

Grand Junction, Palisade & Plateau Valley Railway, Colorado Springs, Col.—E. A. Sunderlin, general manager of this company, writes that the surveys are about completed and franchises and rights of way have been secured for the pro-

posed standard-gage electric railway which is to connect Grand Junction and Palisade, Col., a distance of 17 miles. It is planned to begin construction work about Oct. 15. The overhead trolley system will be adopted. The power station will be located at Grand Junction. [S. R. J., Feb. 29, '08.]

Denver (Colo.) City Tramway.—This company has begun the rebuilding of the tracks and the laying of cement centers from Nineteenth to Fifteenth Streets on Curtis Street. The improvement will be a duplicate of that installed on Sixteenth Street. The tracks will be raised about three inches for the entire four blocks.

Litchfield & Torrington Tramway Company, Torrington, Conn.—It is stated that this company will begin construction work on its proposed electric railway which is to connect Torrington and Litchfield, a distance of 6 miles. The surveys have been rearranged and the rights of way have been secured between the two towns. John E. Sewell, of Waterbury, Conn., is in charge of the preliminary work.

Sanford (Fla.) Traction Company.—The initial work on this line was started last week, when a large force commenced the surveying and preliminary work. The new road will be constructed on Palmetto Avenue from south city limits to First Street, from Palmetto Avenue to Oak Street and on First Street. S. O. Chase and A. T. Rossiter are connected with this project. [E. R. J., Sept. 5, '08.]

Rock Island Southern Railroad, Monmouth, Ill.—The Rock Island Construction Company has been awarded a contract to build the Rock Island Southern Railroad Company's line from Galesburg or Monmouth to Aledo. The contract for the building of the road from Preemption, Ill., to Aledo Junction was let to the Walsh Construction Company, of Davenport, Ia. A 25-year lease has been signed for the use of the Chicago, Rock Island & Pacific Railroad Company's tracks from Rock Island to Reynolds. An order has recently been placed with the Standard Tie Company for 30,000 ties, part of which are now being delivered. It is stated that the steam section of the company's system will be electrified at once.

Evansville, Princeton & Vincennes Interurban Railway, Evansville, Ind.—This company has recently opened its Patoka extension for service. The company is now said to be planning for the construction of the next extension north which will include the task of bridging White River. This extension will run north through Knox and Sullivan counties, connecting with the Terre Haute, Indianapolis & Eastern Traction Company's line, affording through service from Evansville to Indianapolis.

Louisville & Eastern Railroad, Louisville, Ky.—It is stated that this company has negotiated with an Eastern banking house for a loan of \$400,000 with which to complete its extension to Shelbyville and to make other necessary improvements. Percival Moore, Louisville, general manager.

Kentucky & Ohio River Interurban Railroad, Paducah, Ky.—Surveyors who have been working between Paducah and East Cairo, Ill., on this proposed interurban electric railway for several weeks, have entered Cairo to work out a line in that city to the river, where the road will transfer by ferry. The surveyors are headed by A. B. Hogue. C. F. Crump, Columbus, Ind., president. [E. R. J., June 20, '08.]

Baltimore, Halethrope & Elkridge Electric Railway, Baltimore, Md.—Work on the new line of this company is being pushed, and it is probable that cars will be in operation over the route early in December. The portion of the road now in course of construction reaches from the terminus of the Wilkens Avenue car line to Halethrope, a distance of 3½ miles. The line branches off from Wilkens Avenue and runs almost parallel with the Pennsylvania tracks to Halethrope. The road is being built over a private right of way, and the development will be carried only to Halethrope for the present. The total cost of the line to Halethrope will be about \$125,000, and when completed it will be operated by the United Railways. Claiborne & Johnson, contractors, are in charge of the construction and have about 100 men at work. They expect to finish all necessary grading, filling in and construction of culverts by Oct. 1, when the laying of ties and rails will begin. [E. R. J., July 11, '08.]

Old Colony Street Railway, Boston, Mass.—This company has applied to the Railroad Commissioners for permission to double track its line on the Narrows causeway to the town line of Westport, and to move them nearer to the center of the roadway.

Interstate Railway & Power Company, Kansas City, Mo.—The organization of this company, which will build and operate a network of electric lines covering Eastern and Southern Kansas with a main interurban line between Kansas City and Topeka by the way of Lawrence, has been

completed. With this has been organized the Kansas City Union Trust Company, which is to finance the deal. Headquarters of both companies are to be in Kansas City. Among those interested are: William Kenefick, W. A. Rule, William G. Holt, R. C. Rawlings and C. A. Braley. [E. R. J., Aug. 15, '08.]

Kansas City & Olathe Electric Railway, Kansas City.—This company has completed and opened for traffic a new line from the terminus of the Metropolitan line in Rose-dale to Shawnee, a distance of 5 miles. Frank P. Dickson, president of the company, states that the system is to be extended west from Shawnee to Lawrence in a few months. The line, as originally projected, is also to be built to Olathe. Power is obtained from a new station located at Merriam.

Bath, N. Y.—Former Congressman Haines, a prominent railroad contractor, and a number of capitalists have just completed a thorough inspection of the roadbed of the abandoned line of the Sodus Bay Railroad, a line built in 1872 connecting Corning, N. Y., and Sodus Bay on Lake Ontario. The road was abandoned in favor of a route from Corning to Lyons via Geneva, now part of the New York Central & Fall Brook line. It is stated that a decision has been reached favorable to rebuilding and electrifying the line.

Buffalo & Lake Erie Traction Company, Buffalo, N. Y.—This company is engaged in double-tracking its line through North East, Pa. J. C. Calisch, Buffalo, general manager.

Hornellville & Canisteo Railway, Hornell, N. Y.—This company has purchased of the American Bridge Company, of New York, two steel bridges to replace the present timber ones. The company erected one bridge last month and the other will be placed in position Oct. 15, 1908.

Brantford & Hamilton Electric Railway, Hamilton, Ont.—It is announced that this company will complete its entrance into Brantford across the canal from Alfred Street to the South Market Street bridge. The work will require, it is estimated, an expenditure of about \$30,000. Trestle work will have to be built a distance of about one-quarter of a mile, and the rails laid on this. Wm. C. Hawkins, general manager.

Sarnia (Ont.) Street Railway.—This company has just completed a 2-mile extension to the Imperial Oil Company's works and to the P. M. Railway depot. H. W. Mills, manager.

Portland, Eugene & Eastern Railway, Eugene, Ore.—This company, which operates the street railway system in Eugene, is building its line to Springfield. The track from the outskirts of Eugene to the Willamette River at Springfield, where a bridge will be built, is now almost completed and cars will probably be operating to the river bank by Oct. 1. Work on the bridge across the Willamette at Springfield will begin at once. Two concrete piers will be built and the superstructure will be of wood. [E. R. J., July 4, '08.]

Manor Valley Street Railway, Greensburg, Pa.—This company has let the contract for the construction of a line from Irwin to Herminie to Ryan & Campbell, of Latrobe, Pa. It is said that work will begin at once. The construction of the road will cost about \$50,000.

York, Pa.—At a meeting of York, Maryland and Philadelphia capitalists last week, plans were discussed for the building of an electric railway from Hanover to Reisterstown, Md. The line of the York Railways extends to Hanover. It is the purpose of the projectors to make a survey from Hanover to Reisterstown, Md. It is only a short distance from there to Emory Grove. The line of the United Railways & Electric Company now extends from Baltimore to that point. Those interested in the project are: W. H. Lanus; W. F. Bay Stewart, president of the York Railways; H. N. Gitt and George Gitt, Hanover; Dr. James H. Sherman, J. E. Masenheimer, J. A. G. Frederick and Jacob N. DeHuff. It is said that a Philadelphia banking firm will finance the scheme.

Rhode Island Company, Providence, R. I.—This company has presented a petition to the City Council for permission to relocate a portion of its present track in Elm Street and to extend the rails further for a distance of 308 ft. to the harbor line.

***Fort Worth, Tex.**—Charles B. Duffy and Arthur G. Moseley, representing St. Louis interests, are said to be promoting the construction of an interurban motor line from Fort Worth to Mineral Wells, via Weatherford, a distance of 54 miles. The survey has been completed under the direction of J. D. Brown and the cost is computed at \$1,050,000.

Ogden (Utah) Rapid Transit Company.—It is reported that this company is considering plans for the extension of

its system to Huntsville. The company also plans to build from the Utah Hot Springs north as far as Brigham City. Extensions will be built to its local lines south on Grant, Lincoln or Wall Avenues.

Twin State Gas & Electric Company, Brattleboro, Vt.—This company has just completed, through the Wray Construction Company, of Springfield, Mass., the construction of a reinforced steel concrete arch bridge for the suburban line to West Brattleboro.

Roanoke Railway & Electric Company, Roanoke, Va.—This company is engaged in constructing a 1-mile extension to its street railway system. R. D. Apperson, president.

Washington, Arlington & Falls Church Railway, Ballston, Va.—This company expects to build 7000 ft. of new track in the near future. T. Garrett, Ballston, manager.

Seattle-Tacoma Short Line Railway, Tacoma, Wash.—An application has been made to the King County Superior Court by James Lombard for a receiver for the Seattle-Tacoma Short Line Railway. This company was organized by Merle J. Wightman and C. E. Muckler to build an electric railroad between Tacoma and Seattle. Nearly all the right of way has been obtained, franchises acquired in Tacoma and Seattle and some construction has been done.

Seattle (Wash.) Electric Company.—This company has completed plans for transportation facilities to and from the Alaska-Yukon-Pacific Exposition grounds next summer, which provide for a service which the company believes will easily handle the crowds on the largest days of the 1909 fair. At present only two lines run to the exposition grounds, the University and Wallingford Avenue. These will be supplemented by the extension of the Twenty-third and Twenty-fourth Avenue lines to the entrance at the Government right of way at the southern part of the grounds. These lines will tap all of the uptown lines from Jackson Street north. The Broadway and Pike, Madrona, and possibly the Tenth Avenue lines, will cross the present bridge over Lake Union at Latona. This bridge will be double-tracked to meet the requirements of the new system.

SHOPS AND BUILDINGS

Grand Rapids, Grand Haven & Muskegon Railway, Grand Rapids, Mich.—This company has placed a contract with Westinghouse, Church, Kerr & Company, of New York, for the construction of a repair shop and a freight house. [E. R. J., Sept. 5, '08.]

Oklahoma (Okla.) Railway.—It is announced that this company will erect a new car house and repair shop in Oklahoma City within the next 60 days. The car house will be located on Ollie and Second Streets and cover 12 acres of land. About \$60,000 will be expended on improvements, which will comprise four buildings, a wood-working shop, iron shop, paint shop and car house.

Washington, Arlington & Falls Church Railway, Ballston, Va.—The ELECTRIC RAILWAY JOURNAL is advised that this company contemplates erecting a new car house and repair shop.

POWER HOUSES AND SUBSTATIONS

Yarmouth (N. S.) Street Railway.—B. G. Burrill, president, writes that this company expects to build an annex to its power station, 40 ft. x 16 ft., for high-tension materials.

Western Ohio Railway, Lima, Ohio.—This company is in the market for one 100-kw generator. F. D. Carpenter, general manager.

Washington, Arlington & Falls Church Railway, Ballston, Va.—This company expects to build a new substation in the near future.

Charlottesville & Albemarle Railway, Charlottesville, Va.—The ELECTRIC RAILWAY JOURNAL is advised that this company is in the market for one 550-volt, 150-kw. d.c. generator. R. R. Case, general superintendent.

Lynchburg Traction & Light Company, Lynchburg, Va.—This company has recently let a contract for an addition to its steam station, 40 ft. x 80 ft. It will be equipped with two B. & W. 400-hp boilers, heaters, stack, etc., also 500-kw General Electric rotary. The total cost will be about \$26,000.

Twin State Gas & Electric Company, Brattleboro, Vt.—This company has awarded a contract to J. C. Pellett & Sons for reconstructing the foundations of the engines and building of the steam power station. The company is also engaged in reconstructing the intake at its water power station, 8 miles north of the city at Dummertown, Vt.

Merrill (Wis.) Railway & Lighting Company.—This company is in the market for a water-wheel governor.

Manufactures & Supplies

ROLLING STOCK

Yonkers (N. Y.) Railroad has placed an order with the J. G. Brill Company for two snow sweepers.

Sunbury & Northumberland Electric Railway, Sunbury, Pa., is in the market for one single-truck, standard-gage, 34-ft. car.

Charlottesville & Albemarle Railway, Charlottesville, Va., is in the market for one closed car body. R. R. Case, general superintendent.

Houghton County Street Railway, Houghton, Mich., through Stone & Webster, of Boston, Mass., proposes to purchase a number of cars. It is probable that if suitable second-hand cars are offered they will be purchased.

Lewiston, Augusta & Waterville Street Railway, Lewiston, Maine.—The ELECTRIC RAILWAY JOURNAL is advised that the eight semi-convertible cars recently received from the J. G. Brill Company will be equipped with National air brakes instead of General Electric, as noted in the issue of Sept. 5.

Aurora, Elgin & Chicago Railroad, Chicago, Ill., advises that it has placed a contract with the Pullman Car Company for trucks to equip 25 of its high-speed cars. These trucks have been designed by the railway company with a view to meeting the severe conditions of service on its line.

Kansas City, Ozarks & Southern Railway, Kansas City, Mo., is in the market for two combination passenger, baggage and express cars to be about 40 ft. long and equipped with four 50-hp motors each, also for one electric locomotive to weigh about 40 tons. Address 309 Dwight Building, Kansas City, Mo.

Nashville (Tenn.) Interurban Railway has placed an order with the Danville Car Company for three passenger and smoking interurban cars, also one 40-ft. express car. Details of the passenger cars follow:

Length of body.....	33 ft. 4 in.	Body	Wood
Over vestibule.....	43 ft. 4 in.	Underframe	Wood
Length over all.....	45 ft.	Interior finish,	
Over sills.....	7 ft. 11 in.		Honduras mahogany
Height from track to top			
trolley bd.....	11 ft. 4½ in.		

City & Suburban Railway, Washington, D. C., has recently received the first of the 15 suburban cars from the J. G. Brill Company, orders for which were placed on May 2, 1908. Details of the cars follow:

Seating capacity.....	52	Width inside.....	7 ft. 7½ in.
Weight	52,000 lb.	Over all	8 ft. 6 in.
Wheel base	6 ft.	Height inside.....	8 ft. 7/8 in.
Length of body.....	34 ft.	Height from track to sills,	
Over vestibule.....	43 ft. 7 in.		34 in.
Length over all.....	45 ft. 3 in.	Body	Wood
		Underframe	Wood

Special Equipment

Air brakes....	Westinghouse	Interior finish.....	Mahogany
Axles,		Journal boxes.....	Symington
4½-in. motors, 5-in. wheel		Motors, type and number,	
Bolsters, body..	Built-up, steel	4, Westinghouse, 101-B-2	
Bolsters, truck,		Paint	Valentine
Standard Brill, 27-E-1		Roofs	Canvas
Brake rigging,		Sanders	Robinson
Standard Brill, 27-E-1		Seats, Heywood Bros. &	
Brakeshoes,		Wakefield Company	
Standard Brill, 27-E-1		Side bearings.....	Brill
Car trimmings.....	Bronze	Springs	Brill
Center bearings...Symington		Steps	"Stanwood"
Control system,		Trolley poles and attach-	
Unit switch, Westinghouse		ments	No. 12, U. S.
Couplers	Van Dorn	Trucks, type and make,	
Curtain fixtures,		Brill, 27-E-1	
Forsyth, No. 86		Varnish.....	Nobles & Hoar
Curtain material...Pantason		Ventilators, ,	
Destination signs....	Hunter	10, to open each direction	
Fenders	Parmenter	Vestibule	3-window
Gears and pinions,		Special devices, etc.—	
19 and 65 tooth		"Ridlon" trolley catchers,	
Gongs	Brill	A. & W. brake handles,	
Hand brakes	Peacock	Consolidated heaters,	
Heating system.....	Electric	"Bayonet" trolley harps.	
Headlights.....	Magnetite arc		

TRADE NOTES

Coleman Fare Box Company, Buffalo, N. Y., reports that the Coleman fare box was put on the pay-as-you-enter cars on the Grant Street line of the International Railway on Sept. 6.

Safety Electric Railway Company, Dover, Del., has recently been incorporated to operate solely miniature electric railways at seashore and other resorts. Incorporators: Andrew H. Angle and Abraham Garbiel, of Philadelphia, and William I. N. Lofland, of Dover. Capital stock, \$50,000.

M. J. Amey, 1688 Second Avenue, New York City, master painter of the New York & Queens County Railway Company, has invented and is now placing on the market a formula for cleaning electric railway car bodies. Mr. Amey has made successful use of this formula for years on cars of companies by which he has been employed.

General Railway Signal Company, Buffalo, N. Y., has been awarded the following contracts: Mechanical interlocking—Erie Railroad, at Columbus, Pa., 36 levers; Erie Railroad, at Lakewood, N. Y., 24 levers; Erie Railroad, at Niobe, N. Y., 36 levers. Electric interlocking—Chicago & Northwestern Railway, at East Clinton, 28 levers; Chicago, Burlington & Quincy Railroad, material for 80-lever interlocking plant at Ashland Avenue, Chicago, Ill. Block signals—Spokane & Inland Empire Railway, small installation for bridge protection.

National Battery Company, Buffalo, N. Y., advises that the receivership under which the company had been operating since Feb. 1 was terminated Aug. 19. All claims against the company have been settled and the property has been restored to the stockholders. Control of the reorganized company has been secured by the Cutler-Hammer Manufacturing Company, Milwaukee, well known as makers of battery charging rheostats and other electric controlling devices. Under the new management, with ample capital for all requirements, the company is better prepared than ever before to furnish storage-battery equipments for power, automobile and other service.

Fort Pitt Spring & Manufacturing Company, Pittsburg, Pa., announces that the following representatives have recently been appointed to act as the company's agents in their respective territories for the sale of coil and elliptic springs for steam and street railways and springs for general engineering work: W. R. Jacques & Company, New York, N. Y.; Sloan, Howell & Company, Philadelphia, Pa.; W. R. Jacques, Kansas City, Mo. The Fort Pitt Spring & Manufacturing Company has recently established a department at its works whereby it repairs broken elliptic springs. Within the past three months it has successfully repaired a large number of elliptic springs for street railways throughout the country to their entire satisfaction.

Electric Storage Battery Company, Philadelphia, Pa., has recently closed a contract with the Chicago City Railway to furnish and install in the latter's Plymouth Court substation a storage battery, complete with booster, switchboard and wiring, rated at 4800 amp for 1 hour, it being permissible to discharge the battery at rates up to 9600 amp in emergency service. The battery is to be operated on a 550-volt bus. It will be charged at times of light load and discharged as occasion may require on the peak loads. Its location will be adjacent to the Loop District of Chicago, which will make the battery of value as a reserve in the event of any derangement of the substation, high-tension transmission lines or power station.

Charles Dregge Lumber Company, Grand Rapids, Mich., has been succeeded by the Dregge-Grover Lumber Company and the business of the former company in Michigan white cedar will be continued and extended in both the producing and the wholesale ends. The new interest in the company is H. P. Grover, Grand Rapids, a cedar operator in both the upper and lower peninsulas for the past 15 years. The new company will operate extensively in cedar along the Minneapolis, St. Paul & Sault Ste. Marie Railroad and the Duluth, South Shore & Atlantic Railroad, in addition to its hardwood operations elsewhere. The general offices of the company will remain in Grand Rapids with Messrs. Dregge and Grover in charge.

Crocker-Wheeler Company, Ampere, N. J., has installed its 50-hp motors for use in hauling into place the four huge cables which will support the new Manhattan Bridge connecting the Boroughs of Brooklyn and Manhattan. Each cable will contain 37 strands of 256 wires each and the cables are strung in place by two traveling sheaves carried on a steel rope. The hauling ropes are operated by the Crocker-Wheeler motors, which are of the type designed for rolling mill duty. Each motor is geared to a countershaft at a ratio of 5:1 and the shaft is beveled to a driving shaft at a 5:1 ratio. The hauling rope moves at a speed of approximately 480 ft. per minute and carries the sheaves across the river in from seven minutes to eight minutes.

Ohmer Fare Register Company, Dayton, Ohio., gave a banquet to its employees at the Phillips House, Dayton, on Sept. 9. John F. Ohmer, president of the company, was

the principal speaker. He said that the factory had been founded 10 years ago and that it has grown from a small plant to an institution with world-wide reputation. He discussed the manner of his development of the idea of inventing a register for use in street cars. Prizes were distributed as follows for valuable suggestions made to the company by employees: Charles H. Nelson, four first prizes, amounting to \$60; John A. Wiles, one fourth prize and one fifth prize, amount \$9; John Thum, one second prize, \$8; G. D. Rollman, one fourth prize and one sixth prize, amount \$8; Samuel Holland, one third prize and one eighth prize, amount \$8; Edward Ripsch, one second prize, amount \$8; L. G. Mumma, one second prize, \$8; Edward F. Seebers, one-half of one first prize, \$7.50; P. F. Buckley, one-half of one first prize, \$7.50; J. Q. Chasc, one third prize, \$6; R. S. Rollman, one third prize, \$6; S. F. Evans, one fourth prize, \$5; W. H. Nelson, one seventh prize, \$3; C. W. Lang, one ninth prize, \$2. Mr. Ohmer sailed for Europe from New York on Sept. 16 in the interest of the company.

ADVERTISING LITERATURE

Pathé Frères, New York.—The film bulletin of Pathé Frères for the week beginning Sept. 14 contains the following subjects: "Paris Fire Brigade at Drill," "Beginning of the Game of Diabolo," "The Shepherdess," "Unusual Cooking," "Policeman's Vision," "How Gluc Is Made," and "Custom Officer's Revenge."

Bridgeport Brass Company, Bridgeport, Conn.—This company is sending out illustrated postal cards calling attention to its phono-electric trolley wire. The company says the one definite way to test a trolley wire and arrive at a definite result is to place it in "actual service." Phono-electric wire is said to be especially adapted for lines on which the cars operate at 35 m.p.h. and over. Those who desire to know more about the wire are referred by the company to its "Red Booklet," which will be sent on request.

Sterling-Meaker Company, Newark, N. J.—A catalog has just been issued by this company describing its polished bronze fittings for rod or cord operation of fare registers and giving hints for installing registers and fittings. A feature is made of the Sterling center operating system for closed cars. In this system a single rod, supported on V-shaped brackets attached to the car lines in the center, is revolved by double strap handles and the crank or lever oscillates in the slotted ends of two connecting rods, which operate the two registers in one end of the car.

Electric Service Supplies Company, Chicago and Philadelphia.—The feature of the *Keystone Traveler* for September, issued by this company, is an article on ball-bearing trolleys. The trolley base is likened to the spinal column in the human body, and the construction and advantages of the base sold by the company are clearly set forth. The article is concluded with an offer to substitute the base for old bases with a liberal allowance for the old bases. Announcement is made of the connection of F. H. Jameson with the Chicago office of the company. Mr. Jameson was formerly with the Chicago and New York offices of the Ohio Brass Company. A short talk on optimism serves as an introduction.

National Brake & Electric Company, Milwaukee, Wis.—"Compressed Air in Railway Work" is the title of a publication just issued by this company, which contains as its feature a reprint of the editorial from the *STREET RAILWAY JOURNAL* entitled "Compressed Air in Railway Work." This editorial called attention to the work done by many of the large companies with compressed air and pointed out the possibilities of the use of compressed air by small companies, due to the simplicity and perfection of present-day apparatus and its flexibility. With the editorial as an introduction the company has illustrated and briefly described its several types of compressors telling about the service for which they are best suited.

General Electric Company, Schenectady, N. Y.—An attractive pamphlet just issued by this company gives a brief history of the material used in transformer construction and calls attention to the company's improved Type H transformer, in the manufacture of which the described steel is used. The number of this publication is 3687. The Thomson direct-current test meter is described and illustrated in Bulletin No. 4615. This meter is inclosed in a wooden carrying case and is furnished in two distinct ampere ratings: 1, 2, 10, 20, 40 amp, or 5, 10, 50, 100 amp, each with single 110-volt or double 100/220-volt potential windings. A diagram of connections accompanies the meter and shows the proper method of connecting the meter in the circuit.

Joseph Dixon Crucible Company, Jersey City, N. J.—The September issue of *Graphite*, issued by this company, contains as its feature the fifth installment of W. H. Wake-man's article, "Preventing Corrosion of Steam Machinery." Examples are given from practice where steam machinery has been neglected until much damage resulted, proving unsatisfactory to owners so far as they are acquainted with the actual state of affairs, and demoralizing to the engineers in charge of the plants. "Prolonging the Life of Crucibles," by Dudley A. Johnson, is the title of an article the first part of which appears in the September issue. "Recommendations for Auto Chain Lubrication," republished from the Whitney Manufacturing Company's catalog, contains advice that applies in a measure to all chain drives.

Standard Motor Truck Company, Pittsburg, Pa.—The standard electric railway trucks manufactured by this company are described in a catalog just issued, a unique feature of which is the reproduction in blue of several of the original blue prints giving the details of the trucks. The types of double trucks shown are the company's standard M. C. B. construction designed to meet the requirements of high speed city and interurban service. The only single truck described is the company's standard No. C-35, with long spring base especially designed to carry a long bodied city and suburban car at high speed without galloping. The general features common to standard trucks are set forth and the special features of each type are noted in turn as the different types are described. There is a special chapter, entitled "Waste of Power Because of Defective Truck Equipment."

Darley Engineering Company, Pittsburg, Pa.—Bulletin No. 1 of this company, dated September, describes its suction conveyor for ash handling. The conveyor pipe, separator, exhauster, water jacket, intake elbows and fittings are described and a few words added about capacities, repairs and corrosion. In conclusion, such pertinent questions are answered regarding the conveyor as might be asked by prospective customers. The illustrations include a diagram of a complete suction system as applied to the handling of ashes from boilers and a number of typical installations of the suction system, among them the conveyor at the plant of the Westinghouse Electric & Manufacturing Company, Pittsburg. The Northern Ohio Traction & Light Company, Sioux City Traction Company, Hudson & Manhattan Railroad and Pueblo Suburban Traction & Light Company are among the street railway companies using the system.

Dean Brothers, Indianapolis, Ind.—Catalog No. 71, issued by Dean Brothers, has for its subject the power-driven pumping machinery made by the firm. All the types in the catalog may be driven by belt, electric motor or other power. The power ends of the pumps all take the same general description. All the gearing is machine cut, and the crank shafts, pinion shafts and connecting rods are steel, with brasses at crank and crosshead. The crosshead works in bored guides. Especial attention is called to the fact that the duplex power pumps are driven by gears at each end of the crank shafts. No power is transmitted from one crank to the other, and torsion strains between the cranks are eliminated. All pumps made by Dean Brothers are subjected to a running test in the firm's shops, corresponding as nearly as possible to service conditions. Tables are presented giving the dimensions and capacities of the different types of pumps manufactured.

American Locomotive Company, New York.—Catalog No. 10,032, on electric motor and trailer trucks, just issued by the American Locomotive Company, will be preserved and used as a reference book long after many other publications issued at the same time have disappeared from the desk of the electric railway manager and engineer. The pamphlet contains 114 pages, of which 57, or exactly one-half the book, are devoted to illustrations and descriptions of the electric motor, locomotive and trailer trucks built by the company for electric cars. The system employed in illustrating each truck is worthy of commendation. As a rule each truck is illustrated by photographs showing end and side elevations and also by an assembled drawing giving dimensions, weights and other technical information. The descriptive matter outlines briefly the essential features of each truck. Following this portion of the book, 11 pages are devoted to views of cars equipped with the company's trucks, and under each view are given the salient data of each. The rest of the catalog is devoted to drawings and information in regard to rolling stock equipment, which will be of use to all railway engineers, but in which the American Locomotive Company has no direct interest. Thus the standards adopted at the Atlantic City convention are given in full. This information is followed by illustrations of journal boxes of differ-

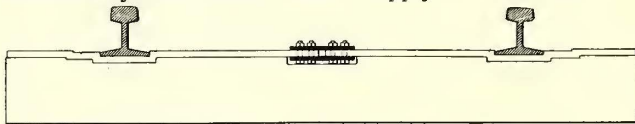
ent manufacturers; sections and weights of steel tired, cast iron, solid forged and rolled steel wheels; tables of the principal dimensions of the street railway motors manufactured by the General Electric and the Westinghouse Electric & Manufacturing Company; data on airbrake equipment of the General Electric, Westinghouse and National Brake & Electric companies; three pages giving data relative to standard car equipment of electric railways in the United States and Canada; a table of the location of third rails, etc. Other data are a list of the names of all parts of an interurban combination passenger and baggage car of the Jewett Car Company, dimensions and weights of car bodies manufactured by the Cincinnati Car Company, a list of names of all truck parts as used by the American Locomotive Company, material specifications, etc. Altogether the catalog is a very valuable one, and the electric truck department of the American Locomotive Company is to be congratulated on the completeness with which the data has been compiled.

ELECTRIC RAILWAY PATENTS

[This department is conducted by Rosenbaum & Stockridge, patent attorneys, 41 Park Row, New York.]

UNITED STATES PATENTS ISSUED SEPT. 8, 1908.

System for Transmitting Electric Currents to Cars, 897,965; John J. Eagan, of San Francisco, Cal. App. filed Oct. 18, 1905. The roofs of the cars are provided with long, depressable contact rods or bars, which are adapted to be engaged by stationary laterally projecting arms along the roadway, and spaced apart by distances adapted to give a substantially continuous current supply to the train.



Insulated Gage Clamp, Pat. No. 898,037

Sanding Device, 897,985; Harry F. Mentzel, of Tarentum, and James H. Moser, of Parnassus, Pa. App. filed Feb. 17, 1908. A pneumatic actuating valve for a sand box, including a perforated plate, constituting a sort of gate valve and moved by a connection from a pneumatic cylinder.

Rail Bond, 897,997; Robert John Ostick, of Covington, Ky. App. filed May 9, 1907. A combined connecting plate and rail bond, including a pair of heavy iron jaws, which embrace the base of the rail and are clamped together by a series of transversely extending bolts.

Fluid Pressure Brake, 898,022; Clarence A. Tripp, of Los Angeles, Cal. App. filed April 29, 1908. A means for controlling the exhaust from the triple valve, whereby the primary operation will be to close the exhaust from the triple valve, and when the pressure rises to a predetermined point the exhaust from the triple valve will be opened.

Insulated Gage-Plate, 898,037; Edward J. Clark, of Baltimore, Md. App. filed Sept. 19, 1906. A form of tie having depressions in which are received prongs on a two-part plate which has hooks extending upward over the base of the rail.

Metal Railroad Tie, 898,080; Walter J. Wilson, of Homestead, Pa. App. filed June 18, 1907. Patentee makes use of I beams for his ties and which have perforated flanges to receive hooks which engage over the base of rail.

Air-brake Coupling, 898,096; Joel H. Cole, Arkansas City, and Joel R. Cole, of Winfield, Kan. App. filed Dec. 18, 1907. A coupler comprising co-engaging coupling members, having springs and attaching plates and adjusting screws carried by the plates and engaged with said springs.

Safety Railroad Switch Device, 898,154; John Tangney and Byron C. Barnes, of Colton, Cal. App. filed Nov. 25, 1907. Depressable tappets are provided adjacent to the usual track rails and which have a rock shaft connection with the switch points.

Automatic Pipe Coupling for Railway Cars, 898,214; Edward E. Gold, of New York, N. Y. App. filed Nov. 27, 1903. An air-brake coupling of the type in which the parts are automatically brought into their clasp or coupled connection when the cars are brought together. Includes specially formed wings or cam bearers, which guide the parts into properly centered relation.

Electric Railway Conduit, 898,216; Elmer E. Granger, of Chicago, Ill. App. filed Aug. 4, 1906. A railway system of the type having a flexible conductor in an underground conduit and which is elevated to electrify spaced contact plates during the passage of a train by magnetic attraction, exercised from a magnet depending from the car.

Railway Electric Signaling, 898,219; Job Hutchinson, of New York, N. Y. App. filed May 10, 1905. The third rail is normally completely enclosed by a cover which is de-

pressed thereon by gravity, but which is elevated during the passage of the collector shoe by the engagement of the latter.

Contact Rail for Electric Railways, 898,220; Job Hutchinson, of New York, N. Y. App. filed May 10, 1905. Relates to modifications of the above.

Railway Electric Signaling System, 898,221; Job Hutchinson, New York, N. Y. App. filed Jan. 2, 1906. Covers additional features of the above system, including a system of relays and a semaphore apparatus adapted to secure danger and overlap signals.

Car Replacer, 898,226; William M. Kitchen, of Havana, Fla. App. filed May 15, 1908. Includes a comparatively heavy casting adapted to be received over a rail and another casting which is hooked beneath the other rail so as to closely hug the outside edge thereof.

Rail Lock for Draw Bridges, 898,252; Charles H. Morrison, of New Haven, Conn. App. filed May 18, 1908. Has a pair of recessed bars which are depressed by a toggle action to engage and hold the base of a rail.

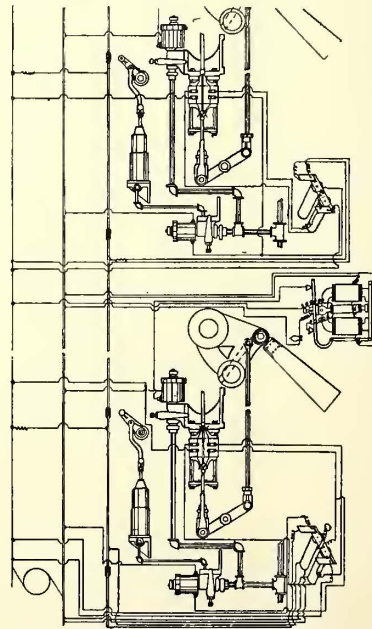
Railway Tie, 898,287; August O. Thunborg, of Webster, Wis. App. filed July 3, 1907. A metal cross-tie for railroads, including a fibrous block as a seat for the rail, so as to avoid the vibration due to a non-yielding support.

System for Controlling Trains, 898,296; Paul Winsor, of Weston, Mass. App. filed Aug. 12, 1905. A means whereby a train may pass a train stop and danger signal providing it is moving at slow speed. Also has means whereby the automatic stop may be rendered operative to absolutely stop a train in one block and prevent it entering a second block when the latter is occupied.

Railway Tie and Rail Fastening, 898,323; William Albert Cline, of Munhall, Pa. App. filed June 24, 1907. Makes use of a form of I beam as a cross-tie and having holes in its upper flange in which prongs are received in a manner similar to the usual spikes.

Electric Signaling System, 898,324; Elmer R. Coe, of Wilkinsburg, Pa. App. filed May 11, 1908. Electric signaling system, including a transformer for impressing a signaling current upon the track rails, and a signal controlling relay, having its energizing winding connecting in series with the track and between the secondary winding of the transformer and the track.

Railway Signal, 898,325; John Pressley Coleman, of Edgewood Park, Pa. App. filed March 20, 1906. A pneumatic device for operating a semaphore signal and including a rack engaging a pair of sectors to move the arm and the usual lantern disk respectively.



System for Controlling Trains, Pat. No. 898,296

Rolling Automatic Car Fender, 898,375; Francis A. Johan, of Seattle, Wash. App. filed Jan. 2, 1908. Makes use of a form of car fender having a plurality of conical fluted vertically disposed rollers along its front edges so as to assist the lateral displacement of any obstacle encountered.

Reissue

Railway Track Fastener, 12,852; William H. Walden, of East Macon, Ga. App. filed April 23, 1908. A form of spike retainer of cast metal, including sockets for the heads of the usual spikes.