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A Lesson in Rapid Transit Conveniences

Nothing makes an individual more clearly realize such blessings as he may possess than a temporary deprivation of them, and the same principle applies to the public. For the past year a very large proportion of the commuters from New Jersey to New York have crossed the Hudson River through the Hudson & Manhattan tunnels and have come to look upon the conveniences which they afford largely as a matter of course. On Monday of this week a small fire in the power station of the company stopped the operation of the station and of the road just before the rush-hour period commenced and obliged the commuters to patronize the ferry service, now somewhat reduced on account of recent lack of patronage. The public was promptly notified of the discontinuance of the tube service so that there was no delay on that score, but the inconveniences of the old method of ferry transportation afforded an excellent lesson concerning the improvements which had been made in transit facilities between New York and New Jersey, and brought a realization of the benefits conferred by the Hudson & Manhattan tubes.

Railway Office Buildings

One of the greatest aids to efficiency in a large corporation is an orderly arrangement of the offices of the organization. Workmen cannot do good work unless they are equipped with proper tools and, in the same way, the energy factor of a large executive staff depends very largely upon the facilities with which the different departments are provided and upon the ability of the department heads to get together, exchange reports and discuss common matters. The organization of a modern railway company is as much more complicated than that of the early days as the modern electric car is than the horse car. For this reason one of the tendencies of the past decade has been the erection of office buildings especially designed to accommodate the needs of public utility companies. The most well known is undoubtedly that in Milwaukee. Recently the Public Service Corporation of New Jersey has erected an elaborate office building designed to house the executive staffs of the three departments of this public utility company. A description of this building which appears elsewhere in this issue illustrates the conveniences which can be afforded all departments in a building designed for the purpose. Few companies would need the extensive facilities provided in Newark, but the tendency thus to consolidate the offices of public service companies is by no means confined to the larger corporations. Smaller companies benefit in equal measure and there have undoubtedly been proportionately as many office buildings erected for the exclusive use of the smaller or moderate sized electric railway companies as for the largest corporations.

A Triumph of Reason

The indorsement by the Public Service Commission, First District, New York, of the main features of the latest proposition of the Interborough Rapid Transit Company and the recommendation of the commission that the offer should be accepted, "provided certain features not now satisfactory can be adjusted," afford strong hope that the rapid transit question in New York is settled. The outcome is creditable both to the Public Service Commission and to the Interborough company; the one for obtaining the proposition and approving its general tenor, the other for presenting it. It is sincerely to be hoped that the Board of Estimate and Apportionment, whose sanction of the plan was asked by the Public Service Commission on Tuesday of this week, will not withhold it through a false idea of the needs of the city or unreasoning prejudice against a transportation monopoly. We wish in no way to depreciate the offer made by Mr. McAdoo in behalf of the Hudson & Manhattan Railroad. In default of a better proposition it would have been desirable. But the transportation needs of Greater New York can be far better served by one company which will operate through routes along the main arteries of travel and provide free transfers at strategic points than by two independent systems. With the existing Hudson & Manhattan Railroad and its proposed extension there will remain two rapid transit systems in New York, but the direction of movement on the proposed subway system is far more closely allied with that on the existing subway than with that on the portion of the Hudson & Manhattan Railroad with which Mr. McAdoo's offer provided that transfers should be exchanged.

Auxiliary Snow-Fighting Equipments

The cost of an adequate snow-fighting equipment of the regulation type is a matter of such serious concern to some electric railways that when a heavy storm does come they are utterly unable to keep the cars moving. Of course, every road should be equipped with a few heavy plows and sweepers which are capable of bucking big drifts, but a great deal of delay can be avoided by using both light and heavy auxiliary equipment. Many of the worst blockades have originated from snowfalls which began in the early morning and some hours before their arrival had been scheduled by the weather forecaster. In such cases the management is apt to be caught off its guard and the service crippled if the cars in night operation are not equipped with shearing devices of any kind or if the snow-fighting cars and their crews are not ready. Shearing boards are inexpensive and they may render good service in situations where they will not interfere with special track work. While they cannot fulfil the functions of sweepers and plows, they are generally able to keep the line open until the heavier snow-fighting apparatus can be brought into action. Excellent reinforcements for the latter equipment are obtainable at low cost by temporarily equipping some spare work cars or freight box cars with plows and sweepers. The car framings must be properly braced for this emergency service, but otherwise the only additional expense is for the snow-fighting outfit and its installation. This practice will avoid the high fixed charges which would be incurred if the rolling stock were idle the greater part of the year. The present winter has begun with unusually heavy falls of snow, and if the weather of the last few weeks is a presage of that to follow vigilance in preparing for snow removal will pay an unusually high premium this year.

EMPLOYEES' MAGAZINES

One of the serious trials of street railway management is the constant change among motormen and conductors. Twenty-five per cent of discharges and desertions among platform men every year means, besides the losses caused by lack of training, an absence of the esprit de corps characteristic of many steam railroad services, but not so frequently found on electric railway systems. Good discipline and homogeneity are impossible of creation among a constantly shifting body of men. Any method that could be developed for bringing into existence a spirit of interest and devotion would be of evident value.

One fundamental defect in the relations of street railway managements and their employees is that it is impossible for the head of a large system to talk often to all of the men. It is equally impossible for the men to find a means of communication and expression except through avenues that more often lead to trouble than to good understanding. It is this line of reasoning and experience that has led a number of steam railroad companies and a few electric railway managements to the conclusion that their systems each needed an employees' magazine—a publication in which the men and the management could both talk and listen. Of course, such a magazine, like every publication, must supply a real need and must also be conducted by some one who understands both publishing and railroad conditions, otherwise it will not be a success. There have been examples of magazines of this kind which have perished by the wayside simply because the editor was a good railroad man, but not a good editor; others have fallen on barren ground and have been unable to take root because their editors, while understanding the newspaper business, were not acquainted with the field which the paper desired to reach. In one case an attempt was made to develop a magazine originally intended for the employees into one which would also be of interest to the general public, but in doing so the support of the original clientèle was lost and the paper died an early death. Another publication of this kind which began in the right way got into the hands of outsiders, and, while nominally the organ of the mutual aid society of the company, accepted advertisements from saloons, breweries and loan sharks. It also entered the political arena in a way to give the impression that the ideas advanced were held by the company, so that the latter had to intervene. The lessons to be learned from these instances are that the same principles which are fundamental in other publications apply to these as well, namely, that in addition to the possession of ability the motives of both the editorial and business departments of the paper should be above suspicion.

The publication should not be conducted for profit, and all advertisements, if any are taken, should be confined to those of reputable local merchants who have goods to sell to the men. The purpose of the paper should be confined to its real object, which is to take the place of voluminous correspondence, to supply a want which present means do not supply and to promote mutual respect and good will.

One of the most successful of the magazines issued by electric railway companies is the *Tramway Bulletin*, now about three years old, published by the Denver City Tramway Company. This paper is the official organ of the Denver Tramway Mutual Association and always contains the secretary's report as to receipts and disbursements, changes in membership and other items of interest pertaining to the association.

The pension department payroll is also published each month in full. The *Bulletin* also contains a personal column relating to the men of the different divisions or departments. In this way if a man has met with some misfortune or bereavement or has been sick his friends on the same and other divisions notice it in the magazine and speak of it, and the various officials of the company are kept better informed as to what is going on in a personal way among their employees. The magazine also publishes a synopsis of the bulletins issued during the month by the superintendent and of the talks to the men by the superintendent, trainmaster, master mechanic or division superintendents, so that each can talk to the entire organization. Some of the best contributions are from motormen, conductors and shopmen. The *Bulletin* also contains a record of the averages obtained during the preceding month by conductors in operating their recording registers. These records are published by divisions, and the division having the highest average heads the list. Considerable rivalry has been developed between the divisions for first place. The magazine is in every way well conducted and well edited.

The experience in Denver has been considered at length in these columns not because the plan followed there is necessarily applicable to other systems of equal extent, but because the Denver magazine is as good an instance of what a publication of this kind can be as any issued on a steam or an electric road and also because it has been found on that system to be of great educational value to both company and men.

HANDLING MATINEE TRAFFIC ECONOMICALLY

The economical handling of peak loads is always a difficult problem in connection with power station output and with the extra car service required on the street. At the concert hall and theater performances in most cities the release of the audience imposes a demand upon the local transportation system for additional facilities of relatively short duration which the regular cars cannot handle without congestion and considerable discomfort to patrons. If cars are massed at or near a single location it is most important to reduce to a minimum the time at which they stand on busy tracks. It is also necessary to encourage patronage by maintaining safe crossing of streets to stopping points in the face of the heavy automobile and carriage traffic which always occupies the roadway immediately after a performance is over. Handling traffic with such short peaks as 10 or 15 minutes economically means that close supervision must be exercised; that co-operation with the police must be insured, and that a comprehensive organization must be maintained. The problem is particularly important after matinée performances because of the coming evening rush

It is undoubtedly true that local conditions of track layouts largely control most operating companies in this matter. Observation of the way in which this class of service is handled indicates, however, that the location of a car house in the immediate vicinity of a theater or concert hall insures the rapid assembly of cars within a minute or two of the time when the exits are thrown open, and with the minimum blocking of regular tracks. Similar results are accomplished where side track facilities are available near the scene of entertainment, with arrangements for flagging cars onto the main line as needed. Two or three inspectors can handle such a situation admirably if team play is effected. An audience emerges from a large building steadily rather than with great rapidity, and it is more desirable to feed cars past the site regularly than to attempt to line them up outside in a standing row where the movement of regular cars is on a very short headway. When there are few regular cars to interrupt, as in park traffic, extended storage on even the main line tracks is feasible. In city service it is desirable to sandwich the extra cars in between the regular movements as far as possible. Prompt work at the telephone, co-operation with doorkeepers at the concert hall, the provision of adequate signs at stopping points, and the preservation of systematic car movements will insure the smoothest and most economical service. It ought always to be possible to anticipate the volume of extra traffic to a fair degree of accuracy by ascertaining the amount of patronage at each performance. Finally, economy demands that extra service of this kind shall be performed by the minimum number of cars and employees, with the shortest possible periods of standing idle and the avoidance of excessive power demands through simultaneous accelerations within a very limited distance.

FARM PRODUCE TRAFFIC

Those roads which believe that good service and low rates are the only inducements which it is necessary to offer farmers in a freight campaign to persuade them to ship their produce to the city by electric freight are apt to be mistaken. Despite the humorous papers which like to portray the traditional lack of business qualifications of the farmer, he is usually possessed of pretty keen sense in those cases where his own financial interests are concerned. The experiences of two interurban roads illustrate this point as well as that of the effect of local conditions upon all transportation problems.

One case was the apparently simple one of obtaining all the milk business within 25 miles of a large city. A fast twice-a-day service was established and the transportation rates were made far below the cost of teaming. Yet, despite two years' hard work, not more than 12 per cent to 15 per cent of the total milk product is being hauled in electric cars. In fact, the nearer the dairymen are to the city the more difficult it has been to secure their shipments. The reason for this seems to be that, while teaming takes time, the farmers take advantage of their trips to carry on marketing and other personal business.

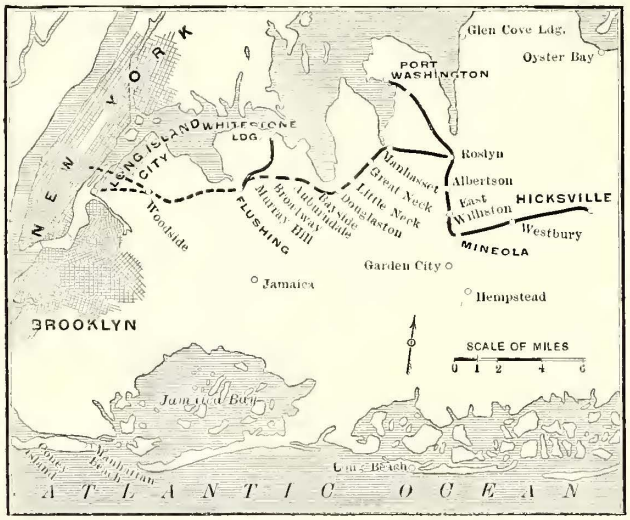
In the second case the territory served by the railway is devoted largely to truck farming. Every possible facility has been offered the farmers to ship by electric express, but a large number of them have remained obdurate and still spend six to twelve hours a day in going to and from the city. This condition is due to the fact that the farmers want to accompany their products to market, where they can drive their bargains in person, in preference to selling through a commission merchant. The prices for garden truck vary considerably from day to day and even from hour to hour, largely on account of differences in quality of the produce sold, whereas staple products like corn and wheat are seldom subject to violent fluctuations.

The lesson to be drawn from these two instances is not that the dairymen and farmers are too conservative, but that the electric operators in these two cases did not fully consider all the circumstances. Evidently, there is more to the freight question than transportation rates and service. No forecast of possible business from this source should fail to include due allowance for such special conditions as those described.

THE NEW YORK & NORTH SHORE TRACTION COMPANY

BY L. P. CRECELIUS AND R. W. EMERSON

The New York & North Shore Traction Company is an electric railway system connecting the various towns and villages within the Long Island suburban zone of New York City. The original charter was taken out in August, 1902, by the Stanley-MacElhinny interests of Cleveland, Ohio. This



New York & North Shore Traction—Full Lines Show Company's Route and Dotted Lines the Connections to Manhattan from Flushing

charter was secured in the name of the Mineola-Port Washington Traction Company, but on July 22, 1907, the title was changed to the New York & North Shore Traction Company. The present system was built and is operated in three divisions as follows: Mineola to Port Washington, 9.69 miles, built in the summer of 1907; Mineola to Westbury to Hicksville, 6.5 miles, built in the fall of 1908. The third extension connects with the Mineola and Port Washington branch at Roslyn, and extends through Manhasset, Great Neck, Little Neck, Douglaston, Bayside and Auburndale to Broadway and Prince Street, Flushing, which is the present terminal. At Little Neck the line enters the city limits of Greater New York, and continues within the city limits to the terminal at Flushing. This last-mentioned line has a branch from the junction of Central Avenue and Chestnut Street, Flushing, which runs to Whitestone Landing on the north shore of the island. The Roslyn-Flushing division is 14.37 miles long. It was commenced in the fall of 1909 and is now completed. The power plant is located midway between Bayside and Douglaston on the line of the road, and is so located that the western end of the line is supplied with power from rotary converters located at the power plant. The substation which is located at Roslyn, 5½ miles distant from the power plant, supplies power for the eastern end of the line. A description of the power plant and substation equipment will be found in another part of this article.

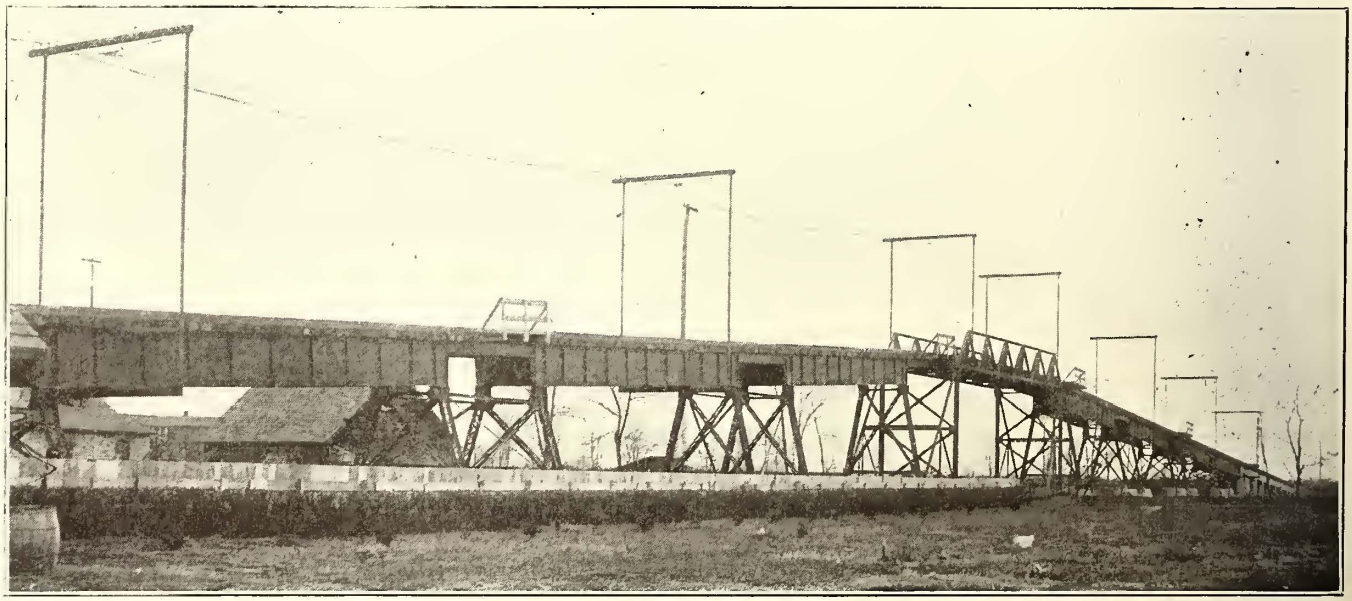
TRACK AND LINE

The track and line construction differs somewhat in accordance with the time the various divisions were built. However, one feature common to all of them is the construction of the sidings 7½ minutes apart. Within the city limits double track is used. There are 10 miles of double-track construction in all.

On the Mineola-Port Washington line there is laid 70 lb. girder rail to comply with the State law, which does not permit T rail or center-bearing rail on public highways. These rails are laid on 6-in. x 8-in. x 8-ft. ties spaced 2 ft. centers and fitted with ordinary bolted joints and No. 0000 compressed terminal bonds. The Mineola-Westbury-Hicksville line is laid with 80-lb. A. S. C. E. rails on yellow pine ties fitted with Carnegie Steel Company's Duquesne joints and No. 0000 terminal bonds. On the Roslyn-Flushing line the track construction from the junction with the Mineola-Port Washington line in Roslyn consists of Lorain section 103-426 grooved rail laid on yellow pine ties. The same rail section is used for the double-track line within the city limits. On this division the Clark thermit joint is installed throughout.

Within the New York city limits metal poles, supplied by the U. S. Metal & Manufacturing Company, are standard. These poles are quadrangular, 30 ft. to 35 ft. long, and are supplied with 30-in. cast-iron sleeves cemented to the pole. About 12 in. of the sleeve extends above the ground level. Outside the city limits the line is equipped with 30-ft. cedar and chestnut poles, except in Mineola, where tubular iron poles are used.

At Bayside the line crosses the Port Washington branch of the Long Island Railroad on a wooden trestle. At Mineola the Oyster Bay branch of the Long Island Railroad is crossed by means of an open-floor deck-plate girder bridge. This bridge is 740 ft. long over all with a maximum span over tracks of 60 ft. The maximum grade on the approaches is 6 per cent.



New York & North Shore Traction—Deck-Plate Girder Bridge Over the Long Island Railroad at Mineola

FEEDER DISTRIBUTION

The Hicksville branch receives current from one 500,000 circ. mil weatherproof feeder extending from the substation to

Mineola, where it reduces to 350,000 circ. mil and continues to Westbury, where it ends. The Port Washington branch is supplied with current from a 350,000 circ. mil feeder, extending from the substation to a point within 2½ miles of Port Washington.

The section of the road receiving power from the substation located within the power plant is equipped with two 500.000 circ. mil feeders, which extend a distance of 4.3 miles to where the Whitestone line branches from the main line. At this point section insulators and line switches are installed in the line. These switches are so connected at this point that overhead trouble on one line does not affect operation on the other. Beyond the junction power is secured from double trolleys which are tied together at intervals.

Double-trolley construction of No. 0000 grooved hard-drawn copper is used throughout the entire system.

ROLLING STOCK

The present passenger rolling stock consists of 15 Brill semi-convertible cars of the interurban type, including two pay-as-you-enter cars. Six of these cars are equipped with four 40-hp Westinghouse 101-B motors and Westinghouse air brakes. These motors are geared 15:69. The other cars are equipped with four 40-hp GE-88 motors geared 17:69 and General Electric air brakes. The company has recently purchased a Brill sweeper and sprinkler, each equipped with two GE-204 motors. The sprinkler has an electrically operated suction pump.

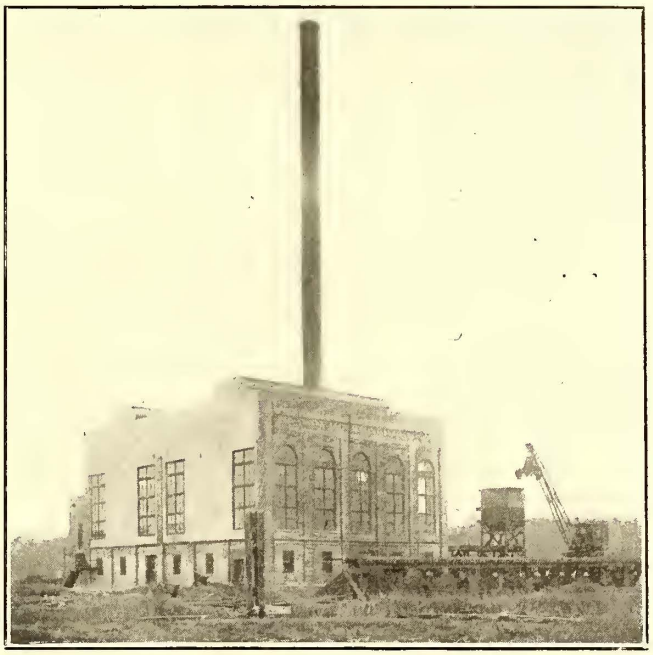
There is also a flat car, equipped with four 60-hp GE-87 motors geared 14:72 and air brakes. This car is used to haul gravel, rail, etc. and also serves for line construction and repairs. It is equipped with a detachable tower.

MACHINE SHOP

The present machine shop is a simple corrugated metal structure in Roslyn with such essential shop tools as a wheel press, boring mill, drill, shaper, lathe and grinder, all of which are driven from a central countershaft. Property has been secured in Flushing on which to build a car and repair shop.

POWER PLANT LOCATION

On Aug. 5, 1910, the company commenced operating its power plant, located on Alley Creek, Bayside, Long Island. The site for this plant had been selected and secured during August, 1909, and work on the foundations was commenced the following October, the first pile having been driven Oct. 25, 1909. The plant was therefore operating in less than 10 months from the time work on the foundations had been started. The site chosen is particularly advantageous, as plenty of condensing water is had at all times and coal is delivered by lighter directly to the power plant dock. The location also eliminates the necessity for a third substation and its consequent operating expense. The rotary converters for direct current for the adjacent lines are placed and operated by the regular power plant attendants. However, the location of the power plant in the "Meadows," as the lowlands are termed, introduced some very important elements in foundation construction. It was found necessary to stud the entire property with piles to a depth of 55 ft., which, in a general way, were driven throughout the site on 4-ft. centers. Under the building walls and other points where heavy loads are concentrated the piling was packed, that is, driven in rows of three piles, and these are on 3-ft. centers. The piles were cut off at an elevation corresponding to extreme low tide and the whole was covered over with a substantial concrete cap. The piles enter hard pan, into which they were driven until each one resisted further penetration. The design of the plant was naturally influenced to a considerable extent by the foundation requirements.



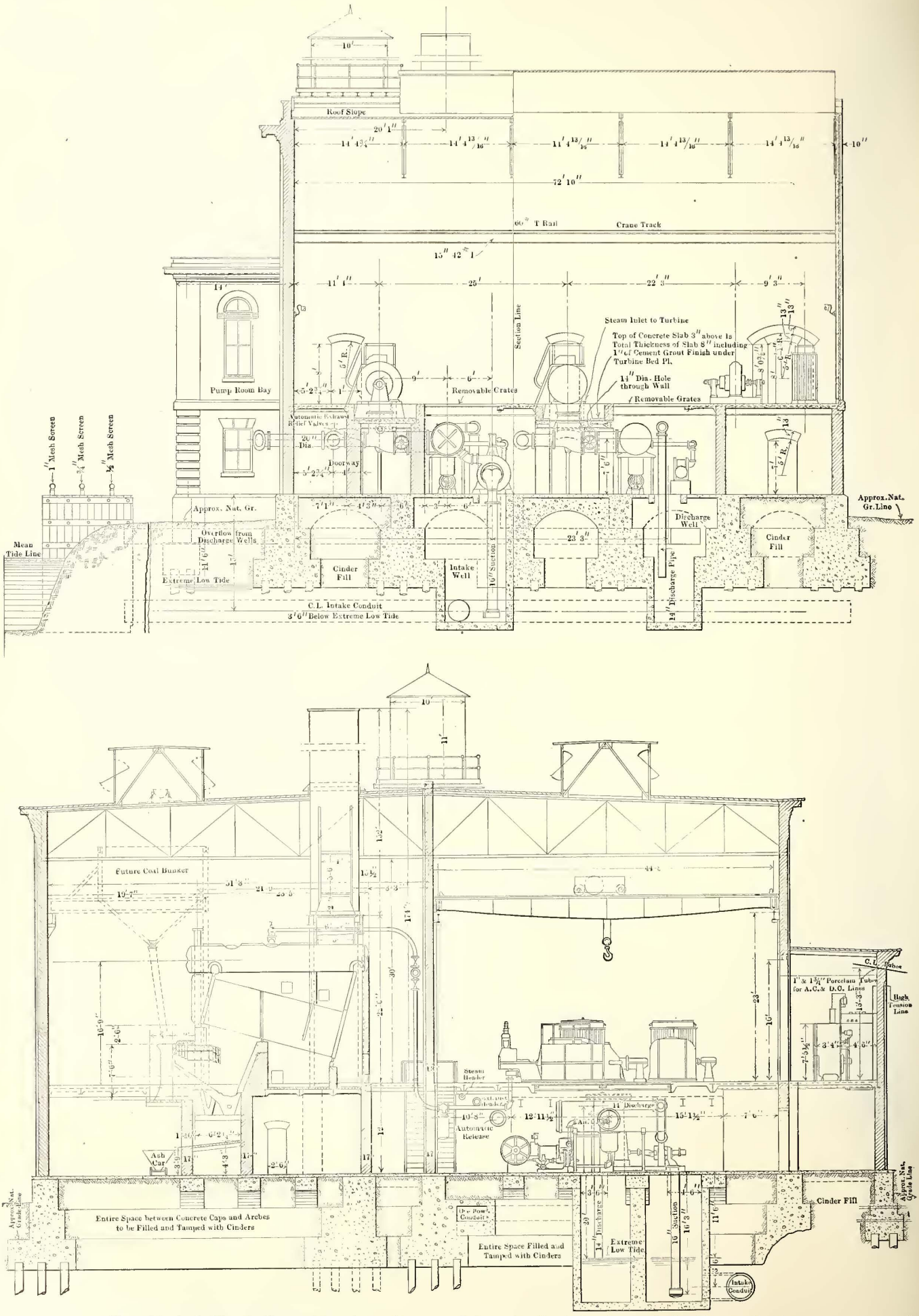
New York & North Shore Traction—Brick Power Station, Showing Temporary Concrete Wall at the Left

The power plant generates current at a potential of 6,600 volts, three-phase, at a frequency of 25 cycles, one-half of which is distributed by means of overhead conductors to a substation at Roslyn, Long Island, 5.5 miles distant. The other substation is located in the generating plant, and both substations contain two 300-kw rotary converters.

New York & North Shore Traction—Standard Car

POWER BUILDING

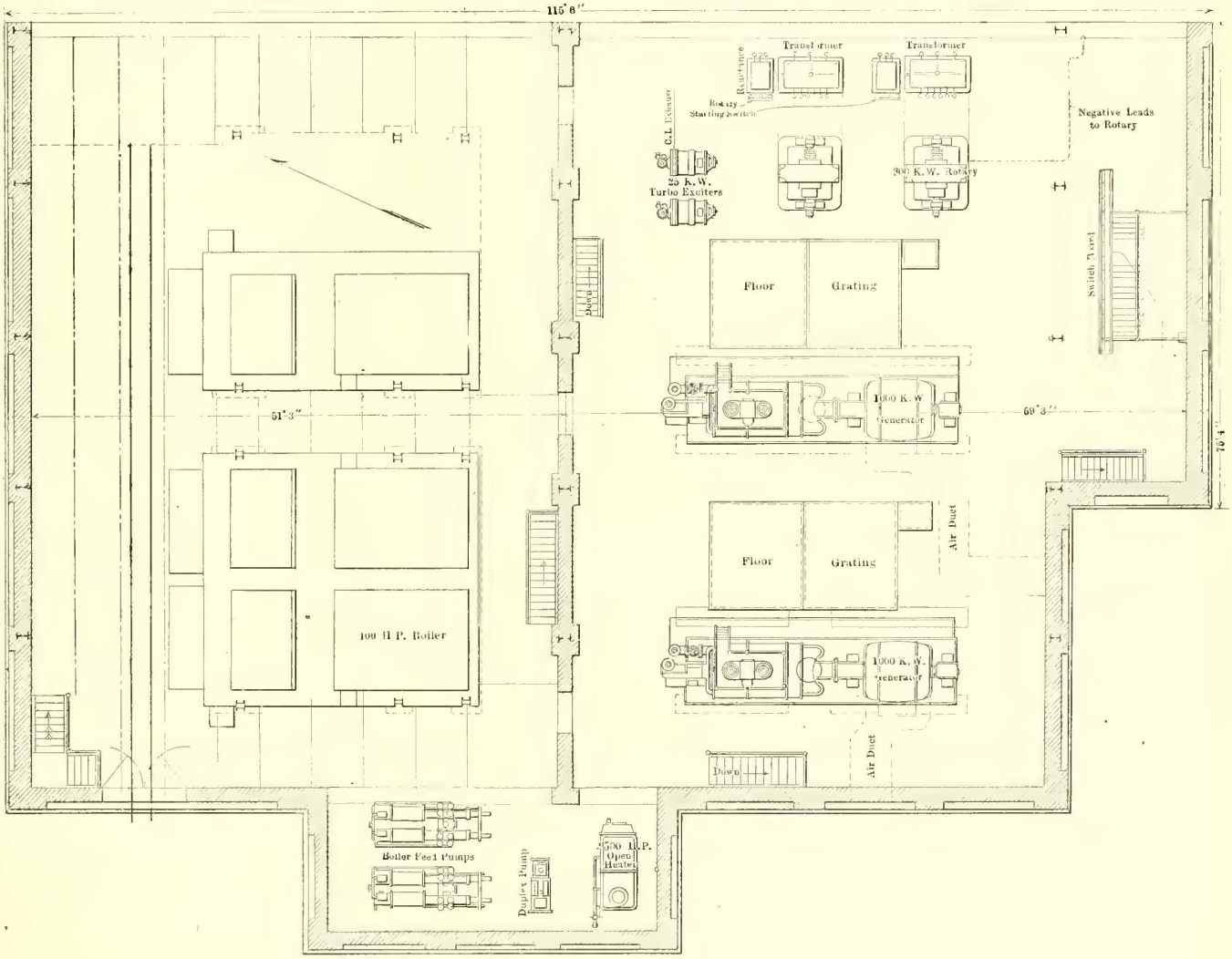
The building is a modern steel and brick structure erected on a concrete cap over piles, as noted hereinbefore. The steel work was completely erected before the masonry was commenced, and, in a general way, consists of standard channels, angles and shapes of the Bethlehem Steel Company. These were decided upon because of the fact that a number of structural steel concerns had a great quantity of Bethlehem shapes in stock and therefore could proceed at once with the work of making up the steel framing. The columns, composed of 10-in., 44-lb. and 10-in., 55-lb. I-beams, are 48 ft. long, and to these are fastened the roof trusses, which are made of standard angles. The design of these made possible a very neat truss, requiring a minimum of steel. The roof over the building proper is made of 3½-in. reinforced concrete slabs; over the monitors the roof is of cement plastered over the top of the ferroinclave reinforcing; the sides and ends of the monitors around the pivoted windows are made in the same fashion. The top is five-ply Barrett tar and gravel.



New York & North Shore Traction—Cross and Longitudinal Sections of the Power Station

The brickwork consists of hard-burned shale brick of standard dimensions laid in cement mortar. The window frames are of large dimensions, giving plenty of light. They are spaced in neatly paneled walls, which harmonize well with the general architectural scheme of the building. To accommodate the switchboard, heater and boiler feed pumps without increasing the size of the building proper, relatively inexpensive bays have been projected, in which this equipment has been installed.

The floors are of reinforced concrete 5½ in. thick, 3 in. of this being over the beams. In this are installed all the enameled steel conduits for the lights and auxiliary circuits from current and potential transformers, field circuits, etc. However, all power leads are installed in 1½-in. fiber conduits neatly cleated to the beams beneath the turbine room floor, where they are plainly in sight and easily accessible for inspection at all times.



New York & North Shore Traction—Plan of Power Station

BOILER ROOM

Approximately, the dimensions of the boiler room are 72 ft. long x 51 ft. wide. The boilers are set two in a battery and one in a half battery, the equipment consisting of three 400-hp B. & W. boilers with the usual attachments and fittings. The boilers are suspended from complete steel frames, independent of the brick settings, to allow expansion and contraction. The rear columns are extended up over the boilers and framed, making a substantial base for the steel stack, which is erected over the battery. The boilers comprise two steel drums 42 in. in diameter and 192 4-in. seamless, hot-drawn, open-hearth steel tubes of No. 11 Birmingham gage. The tubes are spaced 12 in a row and laid 14 in height.

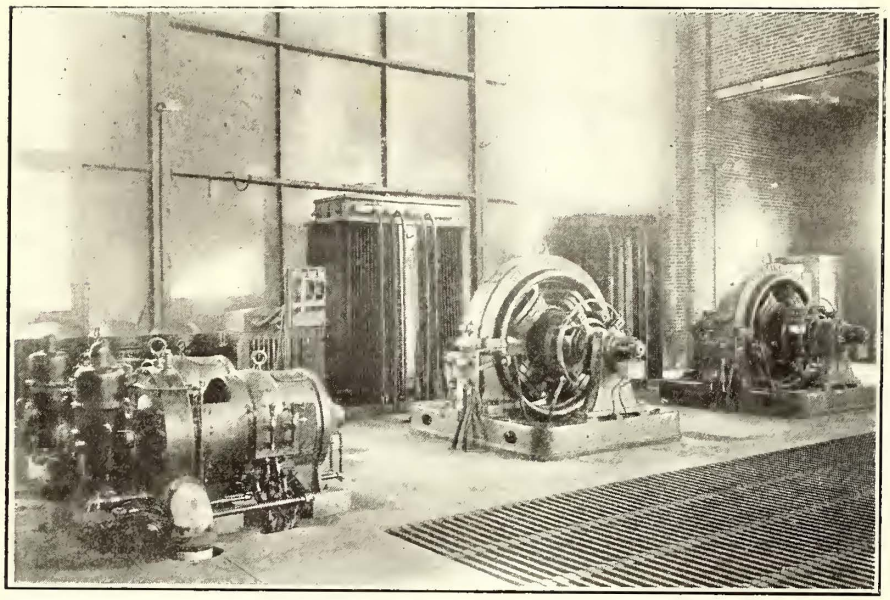
The stack is made of steel plate. The lower third is ⅜ in. thick, the center section ¼ in. thick and the top section 3/16 in. thick, the whole making a stack 175 ft. high from the boiler room floor. The diameter of the stack is 6 ft. 6 in., and its capacity such that the battery can be successfully operated at 75 per cent overload. The third boiler is at present temporarily connected to this stack, but later, when the battery is completed, a second stack will be erected over the same. This arrangement of stacks, while detracting much from the beauty of the plant, as viewed from outside, saves much in the way of idle investment and decreases the enormous stack loss which small plants suffer by reason of the one-stack idea.

The stokers are of the new fin-grate type, as made by the Westinghouse Machine Company, having approximately 95 sq. ft. of grate surface. As they are installed in Dutch ovens projected to a point 3 ft. ahead of the boilers, a large combustion chamber is secured. The furnace arch extends well into the furnace and is over 6 ft. long. The distance from the tip of the arch to the boiler tubes is 6 ft., thus insuring a travel of at least 12 ft. for the gases from the point of distillation on the stoker. As a result of this arrangement practically smokeless combustion is secured at all loads. The ashes are dumped from the grates into ash pits underneath, whence they are raked into a small tip car running in front and are by means of this conveyed to the outside for fills.

TURBINE ROOM AND LIGHTING

The turbine room comprises a space approximately 46 ft. wide x 72 ft. long, through the south wall of which is projected a switchboard bay about 42 ft. x 13 ft. in size. Over the turbines is installed a hand-operated 15-ton traveling crane. The only unusual feature comprised in the arrangement of the turbine room lies possibly in the large floor openings to one side of each turbine, which were arranged to allow ample freedom in the use of the crane. These openings are covered

with gratings constructed of light angles. They serve the double purpose of ventilation and illumination. Any part of the condenser, circulating pumps, air pumps and the suction pipes of the same are thus accessible to the crane, and repairs to this apparatus, the lifting up of foot valves, etc., can therefore be made with the greatest possible dispatch. All the steam equipment is operated at 150 lb. pressure at the throttles. The generating and local substation apparatus consists of the following Westinghouse machinery:



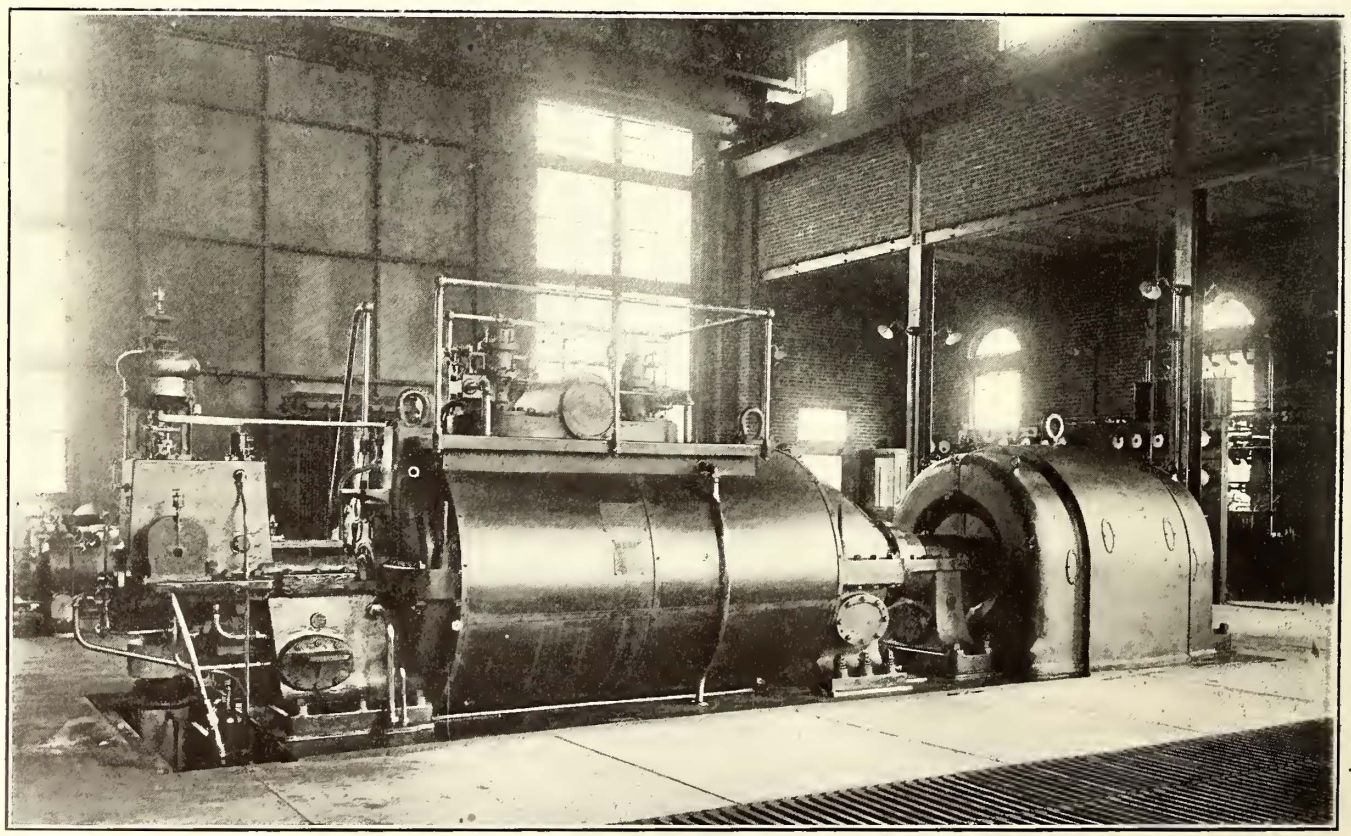
New York & North Shore Traction—Temporary Concrete Wall Opposite the Rotary Converter and Exciter Equipments

Two 300-kw, three phase, 600 volts, d.c. rotary converters, together with their oil-cooled transformers and reactances.

The rotaries both in the power plant and substation are arranged to be started by means of switches connecting them to half-voltage taps in the secondary circuits of the transformers.

The switchboard consists of nine slate panels finished in dull black containing the usual equipment for railway circuits. The arrangement of circuits and grouping of switches has, however, been extremely simplified. The negative circuits of both the rotaries and exciters are not brought to the board but run directly to their destination for control by switches conveniently located at the apparatus. Only overload circuit-breakers have been provided, both on the d.c. and a.c. circuits. However, the generator switches are non-automatic. The board also is equipped with a Westinghouse electrostatic three-phase ground detector.

The plant is illuminated by means of 33 80-cp, 115-volt Meridian lamps in Prismo reflectors mounted on brackets extending from the walls. The lamps have frosted tips and are located 12 ft. from the floor. The basement lighting is accomplished with standard 16-cp incandescent lamps suspended from outlet boxes installed in the concrete floor above. These lights are distributed to accommodate the apparatus. The wiring for the lights is carried in 1-in. enameled steel conduits installed in the turbine room floor, the conductors consisting of No. 8 B. & S. gage flat twin wire. No conductors of smaller cross-section are used in the power station.



New York & North Shore Traction—Turbine Room

Two 1000-kw horizontal turbo-alternators, operating at 1500 r.p.m., 6600 volts, three-phase, 25 cycles.

Two 25-kw turbo-exciters, operating at 3500 r.p.m. and 125 volts, d. c. These exciters are also used for lighting.

BOILER FEED PUMPS AND HEATER

The boiler feed pumps are installed in a bay about 32 ft. x 14 ft. This bay extends through the east wall of the building and lies between the turbine and boiler rooms. A water-stor-

age tank having a capacity of 6500 gal. is placed above on the main building roof and is conveniently located with respect to the pumps. Fresh water for boiler feed, cleaning, etc., is secured from a 4-in. well driven to a depth of 400 ft. The water rises in the well to within a few feet of surface and the casing is capped and piped to a sump located in the basement directly beneath the pumps. A small Blaisdell air compressor is connected to a ¾-in. pipe which is run through the cap covering the well casing and extends into the case to a depth of 150 ft. The water is thus lifted by air pressure (65 lb.) to the sump from which it overflows.

As all the steam used in the turbines is condensed in surface condensers and returned to the heater only a small amount of make-up water is required. This loss represents leakage principally and has been found to amount to about 14 per cent.

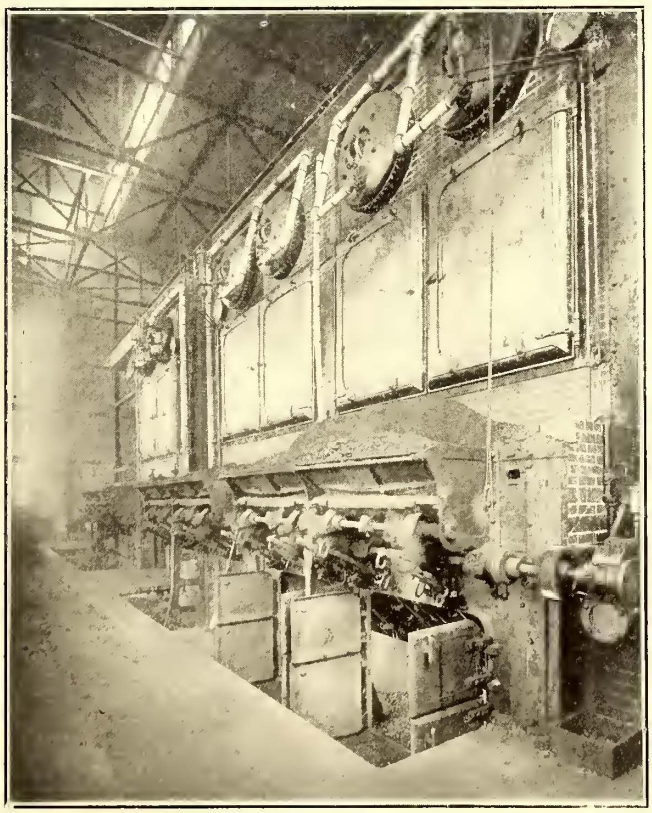
The auxiliary equipment consists of:

Two 12 in. x 7½ in. x 15 in. Worthington outside end, packed, duplex feed pumps; one 9-in. x 5¼-in. x 10-in. Worthington duplex piston pump; one 2500 hp Cochrane open feed-water heater.

The 9-in. x 5¼-in. x 10-in. pump is used as an auxiliary for house service and to elevate the water to the storage tank. However, both boiler feed pumps have been arranged with pipe connections and valves so either one can be substituted for the auxiliary pump in case the latter becomes disabled. An emergency connection has also been made with the city water mains. All exhaust steam, drips, drains, and, in fact, every bit of waste heat, is returned to the heater and most of it recovered. The temperature of the feed water in the heater averages 210 deg. Fahr.

CONDENSERS.

The turbines exhaust into surface condensers, each containing 3500 sq. ft. of cooling surface. The water from the ad-



New York & North Shore Traction—Boiler Room

jacent stream flows by gravity through the intake conduit to wells located directly under the circulating pumps. The water is discharged into similarly constructed wells, the overflow of which is returned to the stream. The intake conduit extends well into the stream and terminates in a crib. The crib is made of heavy timbers and faced with 4-in. sheeting. The crib is 12 ft. long x 5 ft. wide, and into this structure three rectangular screens are secured by slides so that they can be hoisted out by an ordinary chain block and cleaned. The screen in the stream side contains 1-in. meshes, the intermediate screen ¾-in. meshes, and the inner screen ½-in. meshes.

The circulating pumps are 12-in. volute centrifugal pumps,

New York & North Shore Traction—Switchboard in Power Station

each coupled to an 8-in. x 7-in. vertical open-frame engine. The unit has a capacity of 3500 gal. against a head of 25 ft. To each condenser is also connected a 6-in. x 14-in. x 12-in. Blake horizontal straight line R. D. V. pump. The discharge from the hot wells is handled by a 2-in., two-stage turbine-driven pump. This equipment was supplied and installed by the H. R. Worthington Company.

PIPING AND TRAPS

The steam header is mounted on brackets bolted to building wall behind the boilers and is 8 in. in dameter. Into this are connected the 6-in. steam lines from the boilers. Foster non-return valves are mounted on the boiler nozzles. The steam is delivered to the turbine in 6-in. steam lines extending from the header and under the floor to the turbines. The steam supply for the auxiliaries is taken from a loop connected to each end of the main steam header and equipped with valves properly distributed so that failure in the piping at any point can only shut down one turbine. The high-pressure piping throughout consists of extra heavy steel pipe, Crane ferro-steel valves and fittings, rolled steel flanges, and is designed safe for a working pressure of 250 lb. The steam lines leading to the turbines have been equipped with Cochrane separators, each drained by one Squires high-pressure unlimited trap, which returns the condensation to the heater. The auxiliary loop is also drained by Squires traps and the heat returned to the system.

The steam connection from the boilers to turbines was made as short and direct as could be done consistently and both the high and low pressure piping systems were simplified as much as possible without destroying their effectiveness. The equipment was supplied and installed by the Pittsburgh Piping & Equipment Company.

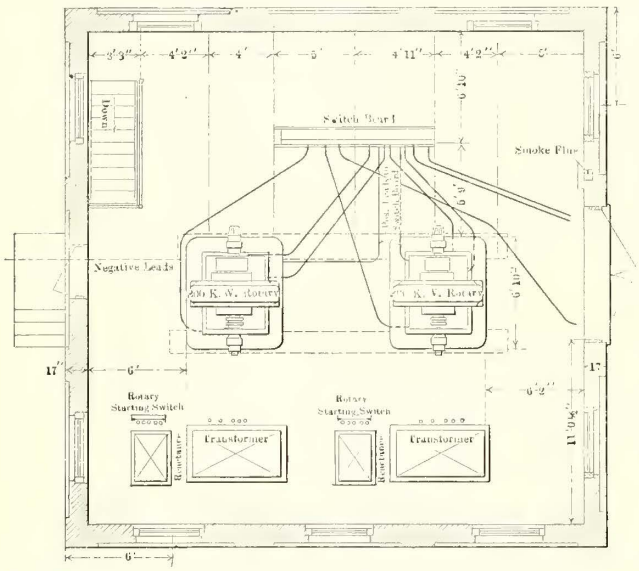
COAL-HANDLING EQUIPMENT

The fuel for the plant is delivered by lighters which are docked alongside the power station and unloaded by a grab bucket having a capacity of 1500 lb. of coal. The bucket is suspended from the boom of a locomotive crane and electrically propelled. The crane is mounted on a trestle extending along the face of the dock; a spur is also extended into the property alongside of the plant from which the coal is dumped into stock piles for use when navigation closes. At one end of the dock a coal hopper has been installed under which the crusher is placed.

The coal is dumped by the crane into this hopper and passes through the crusher, where it is emptied into a second hopper, from which it is taken by means of tip cars as required and conveyed into the boiler room. At present the coal is dumped on the boiler room floor and shoveled by hand into the stoker hoppers. The steel work in the boiler room has been arranged so a coal bunker can be readily installed if found necessary. No labor could be saved, however, at present and the extra investment, therefore, is saved while the load on the plant is light. It is doubtful if the expense of installing the bunker will ever be justified, as it has been found the firemen have plenty of time to look after the fuel supply. The addition of more boilers would naturally require more men, who would be available to look after the extra fuel required. The locomotive crane was supplied by the Brown Hoisting Machine Company, the coal crusher by the Mead-Morrison Company, the tip cars by the C. W. Hunt Company. The fuel supply consists of bituminous run-of-mine, coming mainly from the Barnesborough and Broad Tap, Pennsylvania, districts.

ENGINEERING

Attention in the design of this plant has been focused upon simplicity and this idea carried out as far as could be done without disturbing the effectiveness of the plant. This has resulted in an assembly and arrangement of modern power-



New York & North Shore Traction—Plan of Roslyn Sub-Station

plant equipment suitable for generating current for an electric railway operating 20 to 25 cars and requiring but eight attendants. The load on the plant at present amounts to but 30 per cent of the capacity of one turbo-generator, and the coal consumption averages at this rating 3.67 lb. of coal per kw-hour. Considering the size of the units and the load, this leads to the belief that the plant will operate on slightly less than 3 lb. of coal per kw-hour when operated at the load for which it was designed.

The power plant was built by the New York & Nassau Construction Company and the design of the plant was placed in charge of L. P. Crecelius. The services of Wm. J. Carter, consulting engineer, were also secured to design all building, structural steel and foundation details. The construction company was represented by R. W. Emerson at the power plant site as supervising engineer of construction.

HIGH-TENSION LINE AND SUBSTATION

The high-tension line connecting the power plant with the substation at Roslyn is 5½ miles long. It consists of three No. 2 rubber-covered wires with weatherproof braid. Where dense foliage or other obstructions make this construction impracticable there is used a three-conductor, lead-covered cable which is suspended from a ½-in. steel messenger wire. Four sections of lead-covered cable are used. Potheads are employed at the joints between the open construction and the lead-covered cable. At these points Ohio Brass insulators are used to relieve the strain in the line.

Lightning arresters of the Westinghouse electrolytic type are installed at the power plant and substation. The line is grounded at 14 points between the power plant and substation. The high-tension line is carried on the poles supporting feeders and trolleys. At some points 50-ft. and 60-ft. poles are used to clear the tops of trees. The line is brought into the substation underground through a vitrified tile duct.

The Roslyn substation building is a steel and brick structure with floors of concrete. The plan dimensions are 30 ft. x 30 ft.; height of main floor, 3 ft. above ground line; roof trusses, 13 ft. 6 in. above main floor. Its equipment is identical with the power-plant substation with the exception of the switchboard, which consists of five panels, as follows: One incoming high-tension line panel, two rotary converter switch panels and two rotary converter d.c. panels located on the power-house board. The substation is lighted by two 600-volt d.c. circuits, which supply both the first floor and basement. The rotary-converter auxiliary circuits are carried in 1-in. steel conduits buried in the concrete floor.

FARES, SCHEDULES AND ORGANIZATION

The average rate of fare on this system is about 1 cent per mile. Thus the fare from Mineola to Port Washington (9.69 miles) is 10 cents, but the same fare is charged as a minimum for the 6.5 miles between Mineola and Hicksville. The fare from Mineola to Westbury, half way to Hicksville, is 5 cents. No special rates are granted, except half-rate school tickets in Nassau County. These tickets are sold in books of 20 for $1 and are good only on school days. They are furnished to students only on proper certification from the principal or teacher.

During the past summer the company gave half-hour service on the Port Washington and Hicksville branch and on the completed portion from Bayside to Flushing and Whitestone, which began operation Aug. 12. Hourly service is being maintained between Roslyn and Douglaston, but it is also planned to give half-hour service between Roslyn and Flushing over the recently completed Alley Creek bridge.

The organization of the company is as follows: President and general manager, George A. Stanley; vice-president and secretary, James A. MacElhinny; treasurer, George F. Scofield; assistant treasurer and auditor, G. Franklin Smith; general superintendent, Thomas B. Davis; superintendent of power, R. W. Emerson; engineer maintenance of way, Harry Tappan; master mechanic, C. A. Kinsey.

MEETING OF MASSACHUSETTS STREET RAILWAY ASSOCIATION

The regular monthly meeting of the Massachusetts Street Railway Association was held at Young's Hotel, Boston, Mass., on Dec. 15, 1910. F. H. Smith, treasurer of the association, presided. The evening was devoted to a discussion of public relations of street railways. John T. Conway, of the Old Colony Street Railway, discussed the question of forestalling adverse legislation and the importance of overcoming various difficulties in taxation from which operating companies suffer. Edward O'Callaghan, of the Boston & Northern Street Railway, reviewed the benefits of electric traction in linking communities together and emphasized the advantages of publicity. M. A. Cavanagh, of the Norfolk & Bristol Street Railway, considered the relations of street railways to legislative programs, and the desirability of meeting legislators on a frank and friendly basis. C. A. Sylvester, general manager of the Boston Suburban Electric Companies, spoke of the benefits of co-operation by employees, secured through such agencies as clubs, associations, rewards for good suggestions, opportunities to inspect foreign properties and to report upon them, and a live interest by employees in matters of public interest likely to affect them personally.

OFFICE BUILDING OF PUBLIC SERVICE CORPORATION, NEWARK

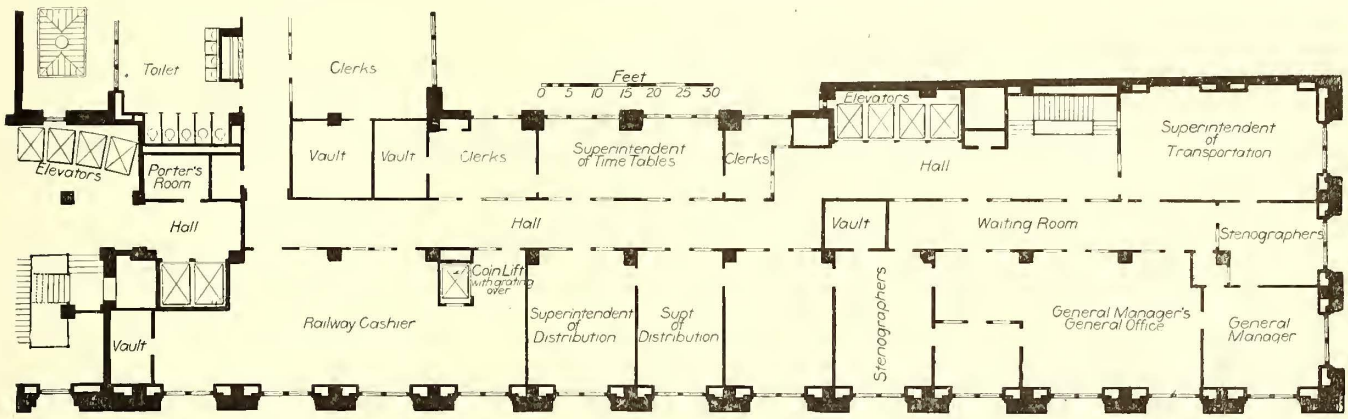
The new building of the Public Service Corporation, at Broad Street and Bank Street, Newark, N. J., about which a short note was published in the ELECTRIC RAILWAY JOURNAL Dec. 3, 1910, page 1094, has been especially designed to accommodate the different departments of that company and contains a large number of features which add to the convenience and rapidity of transacting the business of a large public utility corporation. The main corridors, halls and assembly rooms are finished in marble wainscoting, while the general and executive offices are finished in plaster, with oak trimmings. The details have been so carefully worked out that this is one of the most up-to-date buildings of its kind.

The basement, as stated in the issue of Dec. 3, will be used for testing and demonstrating all kinds of gas and electric devices. To carry out this idea two model kitchens will be built, one with gas equipment, the other with electricity, and these will be opened to the public.

The front of the main floor will be used by the publicity department, to take care of all complaints and for inquiry. The counting department will use the middle of this floor, and the contracting department the rear.

The greater part of the second floor will be used by the bookkeeping departments of the railway, gas and electric companies, while a portion will be taken by the railway auditor's staff.

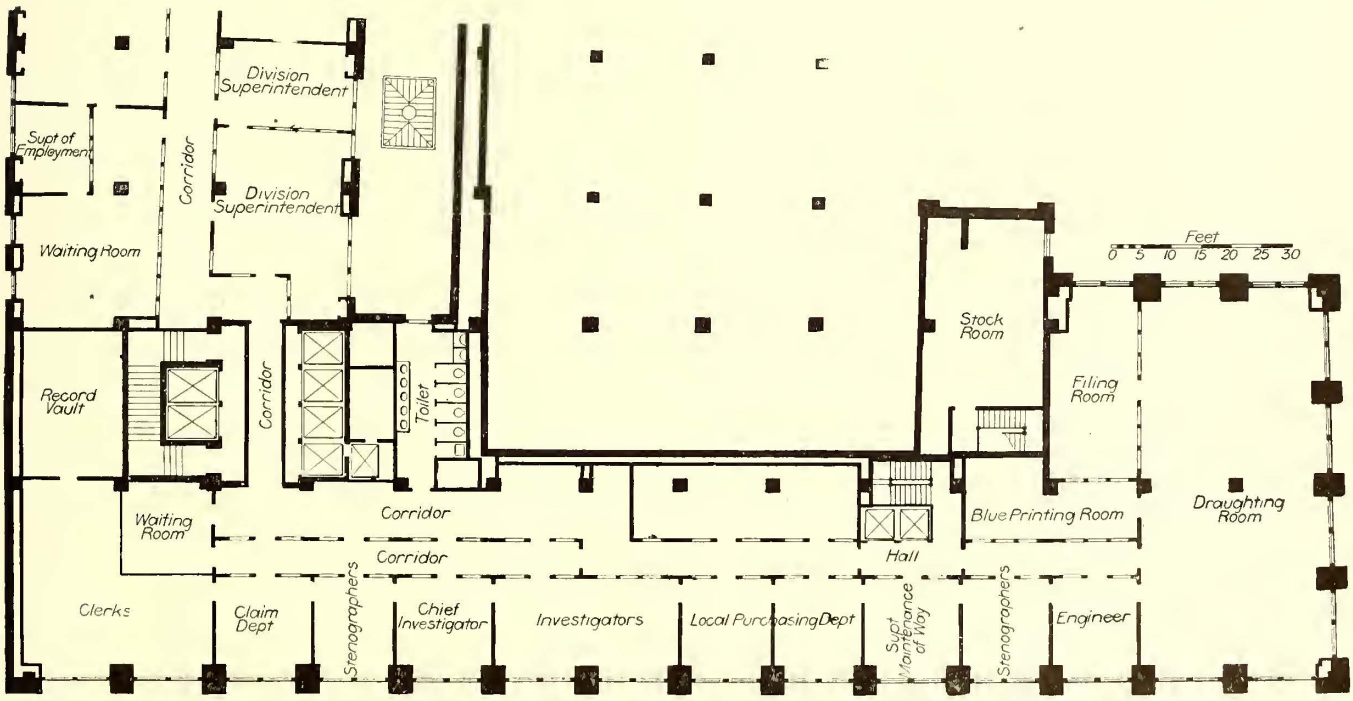
The third floor will be devoted entirely to the railway company, where will be found the offices of the general manager, superintendent of transportation, superintendent of employment and the division superintendent. Also on this floor are the operating and engineering departments, local claim department, cashier's department and the general railway auditor's clerical force. An interesting feature of this department is the arrangement for handling receipts. The money is placed in individual steel boxes by the conductors at the different car houses and sent from there to the Bank Street sidewalk in these boxes. From there it is sent in chutes to the basement, where the boxes are opened and sent by a small coin elevator to the cashier's department, where it is separated and counted. The whole operation can be done in an exceedingly short time.



Public Service Railway Building—Plan of Third Floor

The fourth floor is used exclusively by the general claim department, which includes the general claim agent and his staff and the general solicitor. The next floor is used by the comptroller and the general auditors of the gas and electric companies.

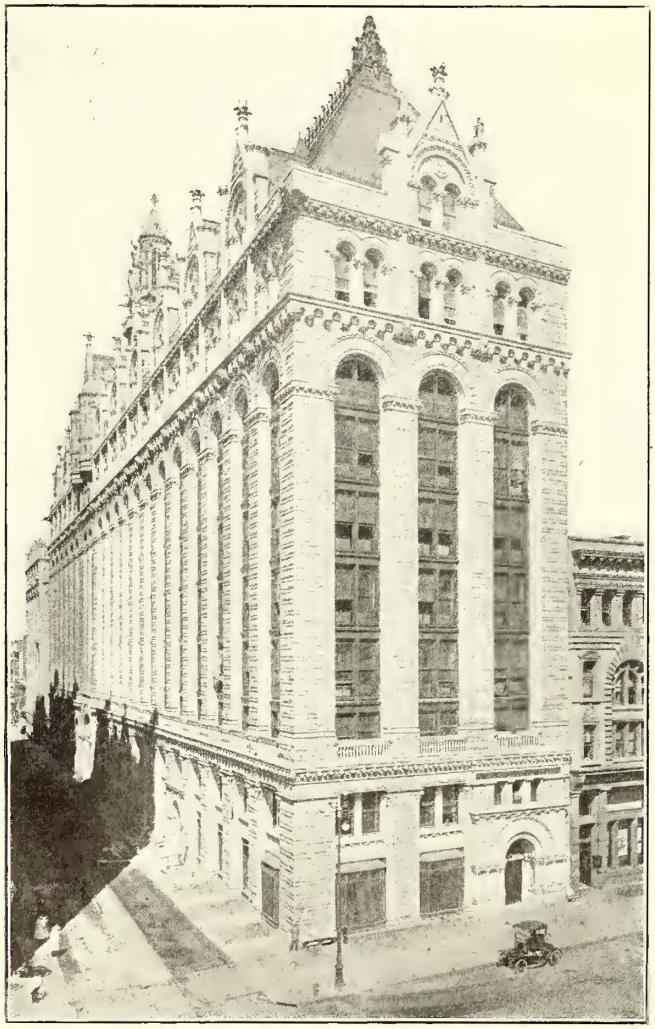
The sixth floor is occupied by the treasurer's department, the railway paymaster and the operating and engineering offices of the gas company. The operating and engineering offices of the electric company are on the seventh floor. The eighth floor will be devoted to the law and real estate departments.



Public Service Railway Building—Plan of Seventh Floor

The ninth floor will be the executive offices, reception, directors' and committee rooms. In connection with the directors' room are a shower bath and a dressing room.

Part of the tenth floor will be used as an assembly room, which is 34 ft. x 76 ft., with a seating capacity of about 300. The rear will be divided into a small private dining room and a large one for the use of the executive and junior officers.



Public Service Railway Building—Exterior

The eleventh floor will be devoted entirely to an employees' dining room, where, by the company furnishing $25,000 annually, the charge for each meal will be reduced to about half the actual cost, or 15 cents apiece. It is estimated that 625 men will eat there daily. The top floor will be used as kitchens for all dining-rooms.

MEETING OF CENTRAL ELECTRIC TRAFFIC ASSOCIATION

At a meeting of the Central Electric Traffic Association held in the office of A. L. Neereamer, the chairman, at Indianapolis, on Dec. 12, 13, and 14, the proposed official interurban map and the publication of an official interurban guide were discussed. The committees in charge of these matters were given further instructions, with the idea that final action will be taken at the next meeting, which will be held on Jan. 16.

The association rechecked and refigured joint passenger tariff No. 3. Part of the changes were caused by a slight change in several basing rates, while the greater portion of the work arose from the fact that the following lines have become parties to the tariff: Dayton, Covington & Piqua Traction Company, Dayton, Springfield & Xenia Southern Railway Company, Indianapolis, New Castle & Toledo Electric Railway and the Muncie & Portland Traction Company.

POLES PURCHASED IN 1909

The total number of poles reported to the Bureau of the Census as purchased during the calendar year 1909 by the telegraph and telephone companies, steam and electric railways, and electric light and power companies of the United States was 3,739,000, as against 3,249,000 in 1908 and 3,283,000 in 1907. There were purchased in 1909 by the same class of users 3,509,000 cross-arms, 6,168,000 brackets and 18,463,000 insulator pins. Cross-arms, brackets and insulator pins were not included in the annual census of lumber and timber products prior to 1909.

This information appears in a preliminary comparative report covering 1909, 1908, and 1907, transmitted this week to Census Director Durand by Chief Statistician William M. Steuart, under whose supervision it was prepared by J. E. Whelchel, expert special agent of the Division of Manufactures. In co-operation with the Forest Service of the Department of Agriculture the Bureau of the Census annually collects and publishes statistics pertaining to the group of lumber and timber industries.

Telephone and telegraph companies reported purchases during 1909 of 2,916,000 poles, or 78 per cent of the total. This was an increase over 1908 in the number reported as bought by this class of users of 354,000 poles, or 14 per cent, and over 1907 of 604,000 poles, or 26 per cent. Steam railroads reported the purchase of 26 per cent more poles in 1909 than in 1908, though 34 per cent less than in 1907, while the reported purchases by electric railways and electric light and power companies were 18 per cent greater than in 1908 and 7 per cent less than in 1907.

There was little change in the average cost per pole of all lengths and from all species of wood in 1909, as compared with 1908, it being $1.89 in the later and $1.82 in the earlier year. The average cost per pole, $2.46, in 1907 was substantially larger than in either of the later years, mainly for the reason that a class of pole consumers in the United States which uses chiefly short poles was not included in the census for 1907.

THE SUMMARY OF POLES PURCHASED

Kinds of Wood.	1909 Number.	1909 Cost.	1908 Number.	1908 Cost.	1907 Number.	1907 Cost.
Cedar	2,449,000	$4,680,000	2,200,000	$3,781,000	2,109,000	$5,203,000
Chestnut	608,000	1,383,000	516,000	1,227,000	630,000	1,620,000
Oak	237,000	137,000	161,000	95,000	76,000	60,000
Pine	180,000	520,000	117,000	383,000	156,000	460,000
Cypress	78,000	117,000	91,000	148,000	100,000	308,000
Juniper	44,000	79,000	42,000	83,000	39,000	109,000
Tamarack	30,000	18,000	24,000	32,000	14,000	10,000
Douglas fir.	25,000	35,000	20,000	80,000	16,000	41,000
Redwood	23,000	49,000	13,000	39,000	31,000	109,000
Bois d'Arc	21,000	9,000	18,000	11,000	6,000	3,000
Spruce	11,000	18,000	8,000	23,000	11,000	29,000
Locust	10,000	9,000	10,000	8,000	5,000	4,000
All other	32,000	19,000	29,000	18,000	89,000	126,000
Total	3,739,000	$7,074,000	3,249,000	$5,929,000	3,283,000	$8,082,000

Cedar continues to be the principal pole timber, contributing 65 per cent of the total purchases in 1909, 68 per cent in 1908 and 64 per cent in 1907. Chestnut, after cedar, was used in greatest quantity in all three years, forming 16 per cent of the total in 1909, 16 per cent in 1908 and 19 per cent in 1907. Among the remaining species, the increase in the number of oak poles reported as purchased during the last three years is noteworthy; more than three times as many poles from this species were reported as purchased during 1909 than was the case in 1907.

Substantial progress in the practice of treating poles with chemicals to preserve them from decay is disclosed by the returns for 1909, nearly one-sixth of the total purchases during that year having had some preservative treatment, as against about one-tenth in 1908 and one-eighth in 1907.

Of the total outlay during 1909, $1,621,000, for cross-arms, brackets and insulator pins, the telegraph and telephone companies contributed 63 per cent, electric railroads and electric light and power companies 32 per cent and steam railroads 4 per cent.

The comparative summary accompanying the report is published in the table in this column.

IMPROVEMENTS IN STREET CAR WHEELS *

BY S. M. COFFIN, MASTER MECHANIC, MOBILE (ALA.) LIGHT & RAILROAD COMPANY.

It has been interesting to note the changes in size, weight and shape of chilled wheels from the horse car days, when a car was a car and the wheel only an insignificant part, weighing anywhere from 150 lb. to 200 lb. To the close observer almost every change shows advancement and betterment. We are now getting better wheels than ever before, for even with the increased service imposed upon them by heavier cars and higher speeds, the manufacturers have raised their guarantee from 25,000 miles to 40,000 miles. This fact indicates the effort of wheel manufacturers to keep abreast of other improvements in electric railroading, yet it must be seriously admitted by the mechanical department that our troubles are increasing with the heavy cars now in general use. Some years ago a prominent railroad man in discussing the problem with the writer expressed the opinion that our cars were not heavy enough in any particular, and that we must get out of our horse car habits. Have we not now overrun the limits of consistency? Surely we have, and our wheels must not be excepted.

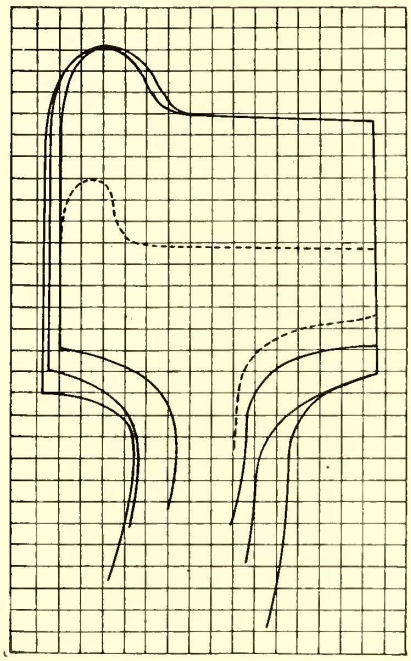


Fig. 1—Variations in Rim Sections, Webs and Flange Contours of New Steel Wheels

We started out with 300-lb. wheels for electric cars, increased gradually up to 450 lb. for single-truck cars for city service and, of course, used considerably heavier wheels for interurban work. By the time we seemed settled on a 400-lb wheel the makers of special track layouts began to assert that our wheels were so hard and sharp that they were cutting out their rails at intersections. Consequently, they introduced extra hard steel plates for intersections. The wheel people asserted that this action was a blow at them. They declared their ability to build flanges to stand hard centers, adding that chilled wheels were expensive tools for chipping out or wearing away such hard centers, but that they could make them harder by increasing the weight. It is sufficient to say that as a result we got both chipped flanges and chipped special work. The wheel manufacturers advised heavier wheels, which not only increased first cost, but unnecessarily abused our rail joints and special track work, while chipped flanges and flat treads continued a source of annoyance to most of us.

It was therefore necessary for those operating heavy high-speed cars to look about for a more durable wheel. The steel manufacturers came to the front, first offering the heavy steel-tired wheels, as used on the steam roads, and later the solid rolled steel wheels, which were also made far too heavy for city cars of moderate weight.

The question of "Car Weights as Affecting Operating Costs," reported on by the committee on equipment at the 1910 convention of the American Electric Railway Association (see ELECTRIC RAILWAY JOURNAL, page 778, Oct. 13, 1910), should have our earnest consideration, not only with regard to wheel weights, but for all other parts of car equipment. This report gives us a minimum of 5 cents per pound per annum as the cost of power for medium-weight and moderate-speed city cars, running, say, 50,000 to 60,000 miles per annum. If this calculation is accurate, we should use wheels as light as consistent with safety and economy. Assuming that we cannot expect to bring our chilled wheels below, say, 400 lb. with a possible 40,000 miles wear, in safety, let us look at the steel wheel proposition.

Steel wheels certainly can be made with lighter centers, leaving the weight at the rim where it is needed for wear. This distribution of weight, of course, builds up inertia. Where stops are frequent this inertia is a factor of vital importance, but we will eliminate it in this discussion. It is quite necessary to have the wheels very closely mated in size and pressed to neat and uniform gage when they are fitted on the axle. The tape in ordinary use for pairing 33-in. wheels is not at all suitable for 34-in. steel wheels, with the size varying with the wear, and there seems to be none on the market for this purpose. The writer graduated one for use on our wheels, measuring on the circumference but reading in diameter by 0.02 in. for diameters from 30 in. to 34½ in. As the 0.02-in. graduations are a fraction over 0.06 in. apart they may be easily divided to give 0.01-in. readings. Hence we always tape our steel wheels both new and old to hundredths, and when we find a pair running a sharp flange, slip them out and grind the thick flange 0.03 in. or 0.04 in. smaller, thus favoring the thin flange.

No doubt many of us in our early experience with steel wheels did not realize the importance of this extra care, and allowed our wheels to run too long without turning or even truing. We then cut away too much good stock from the tread in the effort to secure the original size and form of flange, which is only necessary for high-speed lines or for those operating over heavy grades or very crooked routes; uniform shape is more important.

MOBILE EXPERIENCE WITH STEEL WHEELS

The Mobile Light & Railroad Company has been using steel wheels under some of its double-truck cars since Oct. 30, 1908. We have two makes of wheels, which vary in weight from 500 lb. to 645 lb. per wheel, with a rim thickness of 2½ in. to 3 in. and web thickness ¾ in. to 1¾ in., with 2½-in. tread or

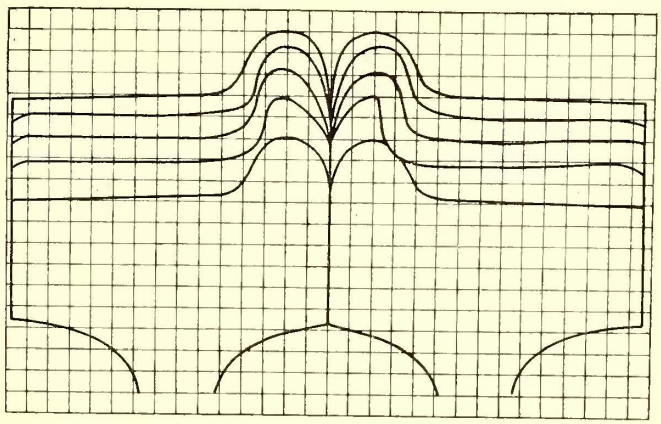


Fig. 2—Variations in Flange Wear of Steel Wheels

3 11/16-in. width of rim, as shown in Fig. 1, and also varying considerably in hardness. Two pairs tried under a single-truck car have shown more difference in wear than any others we have in service. For instance, one pair ran but 21,856 miles with a wear of 0.0183 in. per 1000 miles and had to be turned. This took off 0.0272 in. per 1000 miles, or about 50 per cent more than the wear. They then ran 19,400 miles, with 0.0231 in. per 1000 miles. They were then taken out and the one which had developed a thick flange was ground 0.13 in., making it 0.05 in. smaller than its mate, which was not touched. After this the wheels made 24,180 miles, when they had to be re-

*Abstract of a paper read before the annual meeting of the Alabama Light & Traction Association held at Anniston, Ala., Nov. 28, 29 and 30, 1910.

ground. The flanges were now quite thin, but they were allowed to run again as an experiment in flange wear. An additional wear of 8000 miles was obtained before another turning.

During all this time the other pair of wheels had never been out and their flanges were wearing uniformly, although they were getting thin by this time. They were turned, after running 93,482 miles with a wear of 0.0105 in. per 1000 miles. The stock removed in turning was 1.3 in. (0.0141 in. per 1000 miles), or a total for wear and tool of 0.0173 in. per 1000 miles. These figures, of course, are exceptional and are only mentioned to illustrate the extreme variation experienced.

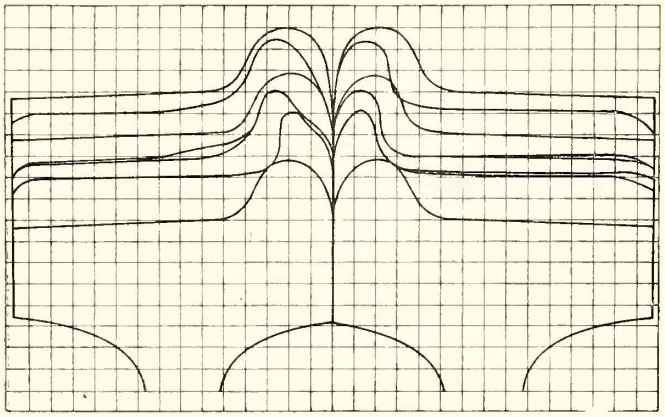


Fig. 3—Variations in Flange Wear of Steel Wheels

We have quite a number of wheels that have run 60,000 to 90,000 miles without removal, with the wear as low as 0.006 in. per 1000 miles, and with an average for 10 pairs selected at random of 0.0109 in. service wear and total wear and tool of 0.0122 in. per 1000 miles. However, by deducting the first two pairs of wheels mentioned we got an average of 57,888 miles, with an average wear of 0.00992 in. and wear and tool of 0.0098 in per 1000 miles. This result, however, was attained by grinding instead of turning. Very close watching was also required in order to touch up the larger wheel before the flange on its mate was too badly chafed.

Fig. 1 shows the outlines of three different rim sections, all with different flange contours and with webs of ¾ in. to 1¾ in. thickness, yet all were shipped to us for the same service. There is also dotted in a 2¼ in. thickness of rim and a possible wear of 100,000 miles, the metal worn away weighing approximately 150 lb. to 165 lb. Figs. 2 and 3 show the varied flange

TABLE I

	Rolled Steel 34-in.	33-in.	Cast Iron
Estimated mileage	150,000	190,000	40,000
First cost, per pair	$40.00	$34.00	$15.00
Fitting on axles	1.50	1.50	1.00
Exchanging	.75	.75	.75
Cost ready for service	$42.25	$36.25	$16.75
Exchanging for grinding (50,000 miles)	.75	.75	
Grinding	1.00	1.00	
Exchanging for turning (90,000 miles)	.75		
Turning	4.00		
Exchanging for grinding (125,000 miles)	.75		
Total cost of worn-out wheels	$49.50	$38.00	$16.75
Deduct for scrap allowance	4.00	4.00	4.00
Net cost worn-out wheels	$45.50	$34.00	$12.75
Net cost for one wheel	$22.75	$17.00	$6.38
Cost per 1,000 miles	.1516	.17	.1595

wear of the wheels referred to hereinbefore as having run under a single-truck car.

COST OF STEEL WHEELS AND CHILLED CAST-IRON WHEELS.

On comparing the cost of single and double-run wheels versus chilled cast wheels for moderate city service the writer believes that the manufacturers will be able to supply 34-in. steel wheels, with a rim 3 11-16 in. wide and a ½-in. to ⅝-in. thickness of plate, weighing as low as 400 lb. for a rim 2¼ in. thick and 500 lb. for a rim 3 in. thick, and with openings punched in the plate to eliminate much of the noise (particularly in rounding curves), for, say, $17 and $20 respectively, delivered at our shops. These wheels, which would be safe to wear to ¾-in. thickness of rim, would probably save at least 150 lb. to 200 lb. respectively. On the basis of 0.015 in. reduction per 1000 miles for wear and tool, their total lives would be 100,000 miles and 150,000 miles.

The manufacturers of cast wheels may also continue to furnish us the same grade chilled wheel weighing not more than 400 lb.

Table No. I makes it clear how we may fool ourselves by a little juggling of figures or be deceived as to the actual cost of operating with the different wheels.

The table shows a low cost for double-run wheels, but let us now deduct for the average weight worn off, neglecting the scrap weight as being equal for all. Considering half the total worn weight as follows we have:

TABLE II

	34-in. Rolled Steel Wheel 100 Lbs.	75 Lbs.	33-in. Cast Iron Wheel 15 Lbs.
Estimated mileage	150,000	100,000	40,000
Cost at $6.00 per 100 lb. a year of say 60,000 miles, or 10 cents per 100 lb. per 1,000 miles	$15.00	$7.50	$0.60
Bringing down net cost for one worn-out wheel	22.75	17.00	6.38
Total	$37.75	$24.50	$6.98
Cost per 1,000 miles	.2516	.2450	.1745

But, say the steel manufacturer and advocate of light-weight, single-run wheels, this is hardly fair to steel wheels, and particularly for light-weight single-run wheels. Take now the average total weights, as follows:

TABLE III

	34-in. Rolled Steel Wheel 400 Lbs.	325 Lbs.	33-in. Cast Iron Wheel 385 Lbs.
Estimated mileage	150,000	100,000	40,000
At 10 cents per 1,000 miles	$60.00	$32.50	$15.40
Bringing down net cost of one worn-out wheel	22.75	17.00	6.38
Actual cost of discarded wheels	$82.75	$49.50	$21.78
Cost per 1,000 miles	.5516	.4950	.5445

The foregoing figures very naturally show the low first cost of chilled cast wheels and next the low cost of double-run wheels. Without considering the dead weight carried in the wheel it has been argued that it is only necessary to consider the stock lost by wear and turning; but a more equitable reckoning is certainly for the average total weight of the wheel.

Some may consider the cost for turning given here as excessive, as those who operate their own lathes may turn them for much less. However, we have to get this work done at a local foundry at much greater cost. This point, too, lends great weight to the single-run wheels, as their use would avoid the purchase of the very expensive lathe suitable for this heavy work and would also avoid extortionate turning rates by local machine shops.

NEW HAVEN RAILROAD EXTENSIONS

It was announced by the office of the New York, New Haven & Hartford Railroad this week that the company had decided upon New Haven as the location of the second principal power station for the operation of its line from New Haven to New York, after the electrification from Stamford to New Haven will have been completed. No date has yet been set for the beginning of this work. Originally it was reported that the line would be electrically equipped from Stamford to New Haven this spring, but the board of directors has concluded not to undertake it so soon. The company has decided upon the erection of a new passenger station at New Haven.

The Panama Canal Commission is planning to build a rack railroad on which electric locomotives will be operated to move shipping through the Panama Canal locks. The Canal Commission will start the work by advertising for 8000 tons of track material. It is expected that two years will be required for the construction of this railway.

TRANSPORTATION OF MILK AND CREAM

BY G. W. PARKER, GENERAL EXPRESS AND FREIGHT AGENT, DETROIT UNITED LINES

An excellent illustration of the extent of the development of the freight and express business of the Detroit United Lines and of its importance to the community which these lines serve was offered at a dairy meeting and milk and cream contest held at Detroit, Mich., Sept. 26 and 27, 1910. This meeting was conducted under the auspices of the Detroit Board of Commerce under the immediate direction of Ivan C. Weld, of the Dairy Division, United States Department of Agriculture, Washington, D. C., and the Detroit Board of Health. Its object primarily was to improve the supply of milk and cream entering the City of Detroit by raising the standard of production. The meetings were addressed by city, State and federal authorities and practically every phase of the question involving the production and distribution of milk and cream was interestingly discussed. The number of people in attendance during the two days of the meeting was by actual count 3126. One hundred exhibits of milk and 10 of cream were made.

The exhibits were solicited by the Detroit Board of Commerce, which distributed entry blanks accompanied by a circular explaining the objects, conditions, etc., to all of the shippers and producers of milk whose names were furnished by the local Board of Health. In addition, representatives of the Health Board in charge of the country districts urged the farmers and dairymen to enter the contest. Nevertheless, the movement was looked upon with distrust by many and it required a great deal of perseverance on the part of those interested to bring it to the successful issue which was ultimately attained.

About a week before the date on which the milk and cream for the contest were to be produced the matter was called to the attention of the traffic officials of the Detroit United Lines and their assistance was solicited. It was realized that immediate steps must be taken to bring the matter again forcibly to the attention of those it was desired to reach. To this end a printed circular was issued by the company giving the date of the contest and other important information and setting forth the fact that all packages shipped on the electric lines would be carried free. These circulars were placed in the hands of all conductors on cars carrying milk, with written instructions to see that a circular should be delivered to each shipper or producer who could be reached. At the same time a supply of "pasters" was furnished to the conductors with instructions to attach one to each package containing empty bottles when they were sent out. These "pasters" indicated what the package was for and where the full package was to be delivered when returned, and it was only necessary for the shipper to fill in his name in the space provided for that purpose to establish proper identification.

DETROIT UNITED LINES
12 WOODWARD AVE.
DETROIT, MICH., SEPT. 14TH, 1910.

"Dairy Meeting and Milk and Cream Contest."

TO PRODUCERS AND SHIPPERS OF MILK AND CREAM:—

You have no doubt received notice of a "Dairy Meeting and Milk and Cream Contest" to be held by the Detroit Board of Commerce at Detroit, Mich., September 26th and 27th, 1910 under direction of the Dairy Division, Bureau of Animal Industry, U. S. Department of Agriculture and the Detroit Board of Health.

Entry blanks for the Contest have been distributed by the Detroit Board of Commerce to all of the Milk and Cream producers whose names they were able to secure. A number of entry blanks for both Milk and Cream, together with a circular letter explaining the object, conditions, etc., of the contest, have been placed in the hands of Conductors on our cars carrying milk, and if you have not already been supplied, you can secure them from him. BEAR IN MIND THAT MILK OR CREAM SUPPLIED FOR THIS CONTEST MUST BE PRODUCED SEPTEMBER 19TH, 1910 AND FORWARDED NOT LATER THAN THE FOLLOWING DAY

In recognition of the work being done by the Health authorities and the Detroit Board of Commerce, and with a desire to stimulate interest in the forthcoming contest, this Company WILL CARRY FREE, on the regular Milk Cars, the empty packages sent out to milk producers and also the packages of samples returned for the contest. A paster will be placed on each package containing the empty bottles when it goes out, showing that it is to be returned to

DETROIT BOARD OF COMMERCE
C/O MURPHY COLD STORAGE COMPANY
DETROIT, MICH

For Dairy Meeting and Milk and Cream Contest to be held at Detroit, Mich.,
Monday and Tuesday, September 26th and 27th, 1910.

The space on this paster providing for name and address should be properly filled in and in addition thereto, name and address must be attached inside for proper identification. Conductors will have a supply of these pasters on hand and will affix the same to the packages upon request.

GEO. W. PARKER
Gen. Exp. and Frt. Agent

Notice of Dairy Meeting and of Milk and Cream Contest

RETURN TO
Detroit Board of Commerce
Care of Murphy Cold Storage Co.
Detroit, Mich.

For Dairy Meeting and Milk and Cream Contest
to be held at Detroit, Mich.,
Monday and Tuesday, September 26th and 27th, 1910.

From_____
(Producer's name in full.)
R. F. D. No._____
Address_____

Paster for Milk Cans

Although the subject of transportation was not discussed in the addresses and lectures given during the meeting, it is evident that in a community with an approximate daily consumption of from 25,000 gal. to 35,000 gal. of milk and cream transportation plays a very necessary as well as prominent part. Aside from the proper observance of hygienic and common-sense methods in producing and distributing this valuable article of food, perhaps no one particular feature contributes more to the wholesome condition of the product than its prompt movement from the farm to the city, where it can be properly prepared for distribution to the consumer. The Detroit United Lines have long been interested in the transportation of milk and cream and have devoted a great deal of time and study to the development of this feature of their business. It was, therefore, a source of much gratification to learn that the larger proportion of the exhibitors and practically 85 per cent of the prize winners were their patrons—that is to say, shipped their product to the city over the electric lines.

A reason for this can no doubt be found in the service which is rendered, as special service is provided on all divisions to take care of this commodity. On several divisions one and two-car trains are operated exclusively for this purpose. On others, where the amount of business is not sufficiently large to warrant the operation of exclusive service, the schedule of the regular express cars has been arranged to meet the requirements. The cars operated in this service are cleaned and thoroughly disinfected at frequent intervals, thereby preventing any possibility of contamination to the milk from the cars. They are operated on a schedule which is best calculated to suit the needs of the farmers and other shippers as well as to meet the requirements of the receiver, and the several city deliveries are so arranged as to be easily accessible to all. In this way the length of time required to transfer the product from the cars to the distributor has been greatly reduced.

The value of this service to the farmer can readily be appreciated when it is explained that the cars stop directly in front of his farm to pick up the milk and cream. In such cases the farmer erects a platform in front of his place, under the supervision of the company's building department, and the cans are picked up and put off at this platform. In cases where the shippers do not live directly on the line of the road platforms are erected at the nearest point, which is usually at a convenient cross-road, and this platform is made to serve all of the shippers in that locality.

The larger dairies doing business in the city of Detroit have established milk-receiving stations at different points on the electric lines. At these stations the milk is received from the farmer, cooled to the proper temperature, and in some cases separated before being shipped. This insures a constant supply and enables the dairy to regulate the city supply to meet the demand. These stations also enable the dairies to secure milk which would otherwise go to nearby creameries and cheese

factories, because the stations are able to receive the milk from the farmer at his own convenience. The demand for milk to supply the city of Detroit has been so great as to lead to the abandonment of cheese and butter making during certain seasons by some of the factories and creameries. It is found that a greater profit can be obtained by shipping the milk secured direct to the city.

The territory served by the Detroit United milk service comprises practically all of that within about 30 miles from the city and on one division the distance covered is 48 miles. But the residences are rapidly encroaching on the nearby country districts and the property is becoming too valuable for dairying or farming. It is now generally recognized that any additional supply of milk and, in fact, part of the future supply of the city must come from a territory beyond the present district. This will necessitate extra service and increased facilities, all of which will undoubtedly be forthcoming at the proper time.

The successful outcome of the milk and cream exhibit this year—and Mr. Weld declared it to have been the most successful ever held under his supervision—together with the interest displayed by the city consumers in the subject of a pure and wholesome milk supply, has fully demonstrated the necessity for future exhibits of this character. Undoubtedly the contest will be made an annual event. In this case it is safe to say that the Detroit United lines will contribute their full share toward the success of these future exhibits.

TALK ON IMPROVEMENTS IN CHICAGO STREET RAILWAY SERVICE

L. H. Davidson, assistant secretary of the Board of Supervising Engineers, Chicago Traction, addressed the Electric Club of Chicago at its weekly luncheon on Dec. 14. Mr. Davidson gave an account of the marked improvement in street railway service in Chicago that has taken place during the past three years. He told of the interest which the Chicago rehabilitation work had excited in many other large cities. Among other things Mr. Davidson said:

"We in Chicago, who have followed the rehabilitation work and use the lines, are not sufficiently impressed with the magnitude of the undertaking or with the results. One should compare the service of to-day with that of four years ago. Transportation in Chicago will never be 'good enough.' It is not Chicago's spirit to be satisfied. Yet the public has cooperated by readily adapting itself to the new types of cars, new transfer privileges and other regulations.

"Transportation facilities through the business district serve an average of about 10,020,000 passengers daily. Of this number, by count for one day, the surface lines transported 523,000 in and out of the business district. The growth of traffic is remarkable, as evidenced by the fact that on one of the elevated roads the daily average increase of November, 1910, over that of November, 1909, was more than 5000 passengers. It is estimated that during the year 1911 the surface lines will have to carry about 1,000,000,000 passengers. The figures for the 10 months ended Oct. 31, 1910, show about 704,000,000 passengers carried. With this huge increase in passenger traffic and the attendant increase in cars operated it is gratifying to know that the percentage of accidents is lower."

Mr. Davidson called attention to the increased purchasing power of the nickel as shown by longer and more comfortable rides available in Chicago in cars operating on shorter headway and better lighted, heated and ventilated. He continued:

"To bring about the improvements it has been necessary to expend vast sums of money. Our records show that on Dec. 1, 1910, the grand total of the capital account of the surface lines, excluding the Consolidated company, was approximately $111,000,000, which includes the $55,775,000 valuation allowed under the ordinance and reported by the traction valuation commissions; thus making approximately $55,000,000 that has gone into actual improvements under the ordinances.

"The investment includes approximately 765 miles of track and about 3000 cars, of which latter number 2200 are of the large double-truck type; 13 substations with approximately 100,000 kw capacity; 26 car houses, six of which are used for storage of cars only, the others being operating car houses, most of them modern fireproof structures of the latest type with the most up-to-date facilities for cleaning, repairing and rapid handling of cars.

"Under the supervision of the board there have been reconstructed 415 miles of trolley, 1150 miles of weatherproof lead-covered and bare copper cable; 200 miles of conduit, 1200 miles of duct and nearly 3000 manholes.

"The reconstruction work necessary to bring about the installation of all the through routes is rapidly nearing completion. The delay has been beyond the control of the board and the companies. The Van Buren Street tunnel is complete and is now in operation. Tracks are being laid in the Washington Street tunnel and work is progressing rapidly on the La Salle Street bore. The steel-tube river section is moored near La Salle Street awaiting the completion of the necessary excavation for its sinking for connection with the land section. Excavation of more than half of the river bed has been made for a depth of 47 ft. and it will be necessary to go about 7 ft. deeper at the middle of the river before sinking the tube. Work on relocating the elevated railway columns, which heretofore have been obstacles to the successful operation of through routes, is being pushed rapidly.

"The Chicago ordinances have demonstrated to the traction world the most remarkable results in the distribution of the nickel. Besides providing for patrons the best type of cars, frequent service, the longest rides, the most modern type of roadbed, improvement in streets brought about by paving both its own right-of-way and a large portion of the streets outside of its right-of-way, there is for the city to date approximately $5,000,000 from the gross receipts as the municipality's 55 per cent."

In the discussion Ralph H. Rice, assistant division engineer of the Traction Board, stated that more than 7,500,000 lb. of copper had been used for overhead and underground feeders during the rehabilitation period for the surface railways. All purchases had been made under standard specifications.

Taliaferro Milton described briefly the storage-battery installation of the Chicago City Railway at the Plymouth Place substation. This battery was close to the center of the downtown rush-hour load and was designed to carry the morning and evening peaks. The railway company paid a fixed amount for the maintenance of the battery, which had shown a net saving on the investment. The battery carried a load of about 5000 amp during morning and evening rush hours.

William Artingstall, division engineer department of tunnels, Board of Supervising Engineers, Chicago Traction, described briefly the novel methods by which the steel-tube tunnel for the Chicago Railways was being installed under the Chicago River at La Salle Street. This tunnel, which was manufactured at some distance from its final location, consists of a steel shell 278 ft. long and about 24 ft. in depth. It has a double bore and each bore is lined with reinforced concrete. The steel structure is to be floated into place and sunk between the concrete approaches, which now are nearly completed. In building this tunnel cofferdam and retaining walls of dimensions heretofore never attempted have been required.

BULLETIN ON CITY PLANNING

The International Street & Interurban Railway Association has republished in pamphlet form the two papers on city planning by Messrs. Wattmann and Nieszen, and also the discussion at that meeting, published in abstract in the Electric Railway Journal for Oct. 1, 1910. Each member company will be entitled to a maximum of 20 copies of this pamphlet without charge. Other copies can be secured for 10 cents each.

SECOND CONFERENCE ON INTERURBAN METHODS CALLED BY INDIANA COMMISSION

The Railroad Commission of Indiana, following the conference with officials of interurban railways on Dec. 13, a report of which was published in last week's issue, called a second conference to be held at Indianapolis on Dec. 23. This conference was called to consider the following recommendations:

"1. That one year's service for motorman shall be requisite for employment to take charge of a car.

"2. That required duties and working conditions of a motorman when in charge of a train be set out.

"3. The installation of approved block system and how soon.

"4. The enforcement of the double order rule and penalties.

"5. The elimination of view obstructions at curves.

"6. The organization of safety committes on interurban systems."

CALL FOR SECOND MEETING

The call for the meeting to be held on Dec. 23 says:

"Pursuant to suggestions made at the recent conference of interurban companies with the Governor of the State and the Railroad Commission you are hereby invited and requested to appear at the rooms of the commission on Dec. 23 for the purpose of making known to the commission whether or not you will agree to and carry out the recommendations made by the commission after its investigation of the recent interurban accidents in this State.

"The commission directs your attention especially to the fact that at this conference the rule known as the 'double-order rule' will be considered and probably reformed to make it more practical and effective.

"The commission invites your special attention to its recommendation with reference to the qualifications and duties of the motormen.

"The commission directs your special attention to its recommendation with reference to the installation of block signals on such lines as on account of the density of traffic may require such signals.

"This meeting is of great importance, and the commission suggests that other engagements, however important, should be set aside in order to come here on the day and date mentioned. You will please advise whether or not you will be present at this conference."

RECORD OF ACCIDENTS

The reply addressed by the Indiana Union Traction Company to the Railroad Commission of Indiana in reference to the first specific recommendations of the commission was published in last week's issue of the ELECTRIC RAILWAY JOURNAL. Substantially the same reply was sent by the Fort Wayne & Wabash Valley Traction Company, the Terre Haute, Indianapolis & Eastern Traction Company and the Indianapolis & Cincinnati Traction Company, although these three companies gave their own records of accidents.

The reply of Charles L. Henry, president Indianapolis & Cincinnati Traction Company, said:

"This company calls your attention to the fact that among the 8,076,635 passengers carried by it and its predecessors in operation of the properties during the period from Oct. 1, 1903, when the Indianapolis & Cincinnati Traction Company first acquired the Shelbyville line, down to and including Oct. 31, 1910, a period of seven years, only one fatality occurred. Therefore this death of an interurban passenger of the company shows for the period stated an average of one to 8,076,635."

C. D. Emmons, general manager Fort Wayne & Wabash Valley Traction Company, said in his letter:

"This company calls your attention to the fact that among the 8,849,305 passengers carried by it on its interurban division during the period from Jan. 1, 1904 (the time at which our records in this respect began), to and including Aug. 31, 1910, a period of six years and eight months, not one fatality occurred to passengers riding upon our cars through neglect of either company or employees. During the same period 97,348,720 city passengers were carried without fatality. You will see that we have absolutely no deaths among a total of 106,198,025 passengers which we carried on city and interurban lines during that period."

The reply of Hugh J. McGowan, president Terre Haute, Indianapolis & Eastern Traction Company, said in part:

"The company would call your attention to the fact that 30,529,538 passengers were carried by it and its predecessors from Jan. 1, 1906, to Aug. 31, 1910, a period of over four years, and only three fatalities occurred to passengers carried on its interurban cars, or an average of 10,176,512 passengers carried to one fatality; and the fatalities which occurred to passengers occurred only through the carelessness or negligence of the passengers themselves.

"On the Terre Haute division of this company, from the year 1907, when the property was acquired by this company, to Dec. 1, 1910, a period of nearly four years, 10,195,756 passengers were carried with only three fatalities to passengers, or an average of 3,398,585 passengers carried to one fatality, and all three fatalities which occurred were due to the carelessness or negligence of the passengers themselves.

"Of the three passengers killed on the lines of this company exclusive of the Terre Haute division, two were killed on account of deliberately walking off the car while it was in motion, for which there was absolutely no fault on the part of the company and no claim therefor has ever been made against the company. The other fatality occurred through a passenger being caught between the car and a projecting pole, during a period of reconstruction work. Of the three fatalities which occurred on the Terre Haute division, one passenger, while intoxicated, jumped from the car while it was running at full speed; one passenger, also while intoxicated, fell from car while it was standing still; and one passenger was killed by being struck by car going in opposite direction. In no case since the commencement of the operation of cars by this company has a passenger been killed by a collision of cars or derailment, or by the violation of rules or disobedience to orders."

REPLY OF WINONA INTERURBAN RAILWAY

William D. Frazer, vice-president and general manager of the Winona Interurban Railway, Warsaw, Ind., wrote in part as follows:

"We find that it will be impossible for any of our officers to attend this conference, owing to previous engagements, therefore answer by mail instead of in person.

"1. (a) We do not think it possible that this company can secure and employ better railroad men for motormen and conductors than it now has. Our men are capable in every respect and most of them have been with us a number of years and are thoroughly tried, and we are satisfied that better men cannot be found in interurban service. (b) It has been the policy of this company to examine the records of applicants for motormen and conductors and these records have always been carefully investigated and letters of reference and recommendation have always been required, and we will of course continue this practice. (c) As to agreeing that all motormen hereafter employed shall have at least one year's experience in train service, while we admit that experience is desirable, we are not prepared to agree that we will never employ motormen who have not had full 12 months' experience in train service and we have no assurance that motormen with 12 months' experience can always be obtained when desired. (d) The only duty we assign our motormen in addition to the operation of cars is the handling of baggage when the cars are at the stations and the motormen have no other duties to perform. We have never seen the necessity of employing extra men for the purpose of handling a few trunks which are carried on interurban cars. An extra man with nothing to do would be more likely to distract the attention of the motorman and cause accidents than the motorman's assistance in loading and unloading trunks at stations when he has no other duties to perform. (e) All of the cars of this company now have separate compartments for the motormen. (f) As to passenger trains, when

a trailer or additional car is attached to a motor car, it has been our custom to put an extra man on the extra car, but in case of freight trailers we do not see any necessity for the extra man.

"2. On the subject of block signals, this company has for some months been investigating the different systems with a view of ascertaining which is the most practicable at a reasonable cost.

"Considering the small number of cars operated by this company, we are inclined to think that your commission should decide the block system is not necessary for this line. We will, however, continue our investigation of the subject.

"3. This company now has in force the double order system of dispatching and will continue to use the double order rules.

"4. This company has been eliminating obstructions to sight at curves and will continue to do so as rapidly as the consent of the adjacent land owners can be obtained and, in the meantime, this company will post slow speed signals at such curves as may be considered dangerous.

"5. Our superintendent and train master are not burdened with other duties which interfere with safe operation of trains.

"6. Our train dispatchers are not required to handle interlocking plants or perform other duties than those pertaining to dispatching trains, except our chief dispatcher, who performs the duties usually assigned chief dispatchers."

REPORT OF COMMISSION TO GOVERNOR

The report of the Railroad Commission to Governor Marshall of Indiana said, in part:

"Conclusions as to the cause of these accidents are not difficult; the recommendation of a practical and efficient remedy for such accidents under subsisting conditions of interurban organization, operation and revenues is the most difficult work ever required of this commission.

"It is clear to us that these operating conditions are incompatible with safety, and that fatal accidents must continue to occur unless there are radical changes and betterments; that, on the one hand, the public demands and has the right to demand a much higher degree of safety than these lines now afford, and this proper factor of safety can be secured only by the expenditure of larger amounts of money than are now used in the employment of competent, trained, experienced men and the installation of adequate safety devices, and by holding to criminal responsibility whoever by flagrant neglect causes these fatalities; on the other hand, it is equally clear that if this is done, as it ought to be, there will be little or nothing left, passing all questions of dividends on stocks, to pay interest on the bonds of some of these companies.

"In 1907 the General Assembly of Indiana directed the commission to investigate the terrible accidents at Woodville, Fowler and Sandford which occurred on the steam railroads. We recommended the passage of the block-signal act, and the act to increase the efficiency and powers of the officers and men, required printed rules, frequent periodical examinations, the Indiana railroad convention, and the criminal punishment of officers and men who disobeyed these rules or who were intoxicated while in performance of duty. While the companies affected have not adequately followed the views of the commission with reference to block systems, and the courts and juries have made no convictions for offending the statute, it is significant that since 1907 no such awful accidents have occurred on the steam railroads in this State. If certain things in cases of fatal accidents were prescribed for the steam railroads and have done good, even though they have the advantage over electric lines of long years of development, instruction and organization of efficient employees, how much more necessary are the same things in the case of new electric lines, whose men have comparatively few years of training and service and whose cars are light and more dangerous when collisions take place.

"On June 19, 1909, the first of these most serious accidents took place on interurban lines. This was a butting collision on the Chicago, Lake Shore & South Bend Electric Railway. In September and October, 1910, there were five head-on collisions, two of them with great fatalities, two on the Indiana Union Traction, one each on the Fort Wayne & Wabash Valley Traction, the Terre Haute, Indianapolis & Eastern, and the Indianapolis & Cincinnati Traction. These accidents have many features so similar that they may be classed together.

"The Indiana Union Traction Company at our request furnished us with the names and length of service of its interurban trainmen. We analyze the same as follows:

In service	20 years	1	In service	9 years	6
" "	19 "	2	" "	8 "	10
" "	18 "	2	" "	7 "	11
" "	17 "	1	" "	6 "	16
" "	15 "	2	" "	5 "	12
" "	14 "	2	" "	4 "	9
" "	13 "	3	" "	3 "	13
" "	12 "	3	" "	2 "	24
" "	11 "	3	" "	1 year	21
" "	10 "	4	Less than 1 year	24

"It is especially remarkable that the two accidents on this line occurred on the divisions where there are no block signals. The Indiana Union Traction has block signals on its divisions between Indianapolis and Muncie. While these have not worked altogether satisfactorily, the managing officers stated that they would not dispense with them.

"The worst and most disastrous wreck was that on the Fort Wayne & Wabash Valley Traction Company's line Sept. 21, 1910. There were no block signals on the line, although the daily movement of trains was about 38 trains on a single-track railroad. The freight train crew causing the accident lacked the proper training, experience and fitness for the work they were performing. On analyzing the whole force, particularly so far as length of service is concerned, a most important factor in good railroading, we find that of the conductors employed on this line there have been

In service	9 years	1	In service	3 years	6
" "	7 "	1	" "	2 "	4
" "	6 "	2	" "	1 year	10
" "	5 "	1	Less than	1 year	15
" "	4 "	2			

"As to the motormen we find there have been

In service	10 years	1	In service	4 years	4
" "	9 "	2	" "	3 "	7
" "	8 "	2	" "	2 "	1
" "	7 "	2	" "	1 year	11
" "	5 "	4	Less than	1 year	12

"In our findings on the Chesterton wreck we said: 'This commission regards interurban railroads of the State as one of the greatest factors of its development and progress.' We do not believe that the people of the State are willing to do without the accommodation these lines afford, but it is necessary for the public, for the men and for the owners themselves that a higher plane of railroading shall be adopted. Many remedies are proposed, and all agree that there must be a change: Double-tracking, but there are certainly not sufficient funds for this. Licensing of the men by the Railroad Commission; this will not do. The commission cannot operate these roads from its office in the State House. Slow speed; this is entitled to consideration and may have to be enforced for some of the lines until they install block systems. But each of these accidents, and all of them, clearly point to two essential things:

"1. Better railroad men. We insist on men mentally and physically able, devoted to their work, ambitious to succeed and trained by years of service to neglect no precaution that will prevent disaster.

"2. Block signals.

"It is notable that in three instances the cars came together on curves, and that the view of the motormen on each car was obstructed by trees and foliage on the inner side of the curve of the track.

"It is the evidence in the investigation held of these collisions that the motormen did not and could not see the approaching car until it was within a distance of about 1000 ft., too short a space within which to stop.

"The growth along the track at these points, which obstructed the vision, is partly on the right-of-way, but for the most part on private lands located adjacent thereto.

"It is recommended that additional legislation be had whereby railroad companies may be authorized to condemn and re-

move certain obstructions located on lands adjacent to the rights-of-way where the same interfere with safe operation, and where the company and the owners cannot agree upon the compensation to be paid for the damage sustained.

"This commission believes that, in order to prevent such fatalities, where the officers or men of these companies, including their directors, carelessly and negligently do or omit to do an act from which the death of a passenger or employee results, they should be prosecuted and convicted. We think that not only the man who forgets, but the officer who employs an incompetent man and the director who diverts revenue that should be appropriated to securing a good man, to installing safety devices and other necessary purposes, should be held criminally accountable.

"There is no antagonism to the interurban companies, their owners, officers or men. Most of them have co-operated freely and fully with this commission."

RECOMMENDATIONS OF THE COMMISSION

The recommendations of the Railroad Commission of Indiana, which were presented at the first meeting, on Dec. 13, were as follows:

"1. (a) That said company shall secure and employ better railroad men for motormen and conductors, taking such steps as are necessary to secure capable and fit men and to keep them in its service; (b) that applicants for positions as motormen and conductors should not be employed until their former records have been carefully investigated and all letters of reference and recommendation have been carefully considered; (c) that all motormen hereafter employed shall have at least one year's experience in train service, this qualification being no greater than the law of the State requires for flagmen of passenger trains on steam railroads; (d) that no other duties be assigned to motormen than the operation of their cars, and that they shall not be required to do the work, or assist in doing the work, of baggagemen or expressmen; (e) that separate compartments shall be provided for motormen, so that their exclusive attention may be given to the operation of their cars, and so that they may not be diverted by the conversation of passengers or other persons; (f) that when a trailer or an additional car is attached to the motor car a third man shall be put on to assist and work under the direction of the conductor.

"2. That said company proceed to install block signals on its interurban railroad, and to this end that within 60 days, or by Jan. 1, 1911, it shall report and submit to this commission plans and blueprints of some adequate block system, the same to be hereafter installed and operated as soon as practically possible.

"3. That said company shall enforce the double order system of dispatching on its lines, and that hereafter no exception under any circumstances shall be made to this rule. Delays are better than accidents.

"4. That although trainmen should operate by rules and timecards and orders, and signals when installed, said company shall proceed to eliminate obstructions to sight at curves where sight is badly obstructed. And until this is done said company is directed to post slow speed signals at said curves, and to reduce speed of cars at such places to a limit of not exceeding 15 m.p.h.

"5. That division superintendents and train masters should not be burdened with other duties than those pertaining to train operation.

"6. That train dispatchers should not be required to handle interlocking plants or to perform other duties than those pertaining to the dispatching of trains."

The Moscow-Windau-Rybinsk Railway has recently acquired an electric accumulator car of Russian make for experimental and demonstrative purposes. The car cost $38,625, and is to develop a speed of 35 m.p.h. to 67 m.p.h. It is divided into first-class and second-class compartments of 23 seats and 38 seats, respectively. This car is to run on the line between St. Petersburg and Tsarskoye-Selo.

HEARINGS BY RAILROAD SECURITIES COMMISSION

The Railroad Securities Commission, which is investigating the practicability of federal supervision of the issue of stocks and bonds by common carriers, held several public hearings in New York, beginning on Dec. 15. The hearings, which were held in the banking house of J. & W. Seligman, were attended by Arthur T. Hadley, president of Yale University, chairman; Frederick N. Judson, St. Louis; Frederick Strauss, New York; Walter L. Fisher, Chicago, and W. E. S. Griswold, New York, secretary. Prof. H. B. Meyer, chairman of the Wisconsin Railroad Commission, who has just been appointed a member of the Interstate Commerce Commission, was not able to attend all of the hearings of the Railroad Securities Commission, of which he is also a member.

TESTIMONY OF RICHARD HALE

Richard Hale, of Boston, who was the first witness of Dec. 15, thought that the government should furnish a place where investors could secure full information regarding the affairs of corporations, but that that was the only protection the government should give to investors. He suggested that the "counters," as he called the evidences of securities, should have no relation to capitalization; that there should be a definite prohibition against a valuation, such as an assumed value of $100, on the "counters;" and that rates should be based partly upon cost and partly upon market value. Mr. Hale expressed the opinion that the State of Massachusetts had not offered sufficient speculative profit to induce interurban railroad development. He described the contract by which the large investment of capital in the Boston Elevated Railway was protected by the agreement that for a period of years no taxes other than those specified should be levied and the rate of fare should not be reduced. Mr. Hale approved a method whereby a bargain should be made in the case of each railroad that for a definite fixed term of years a schedule of rates might be maintained.

TESTIMONY OF M. R. MALTBIE

M. R. Maltbie, member of the New York Public Service Commission, First District, testified on Dec. 15 in reference to the experience of that commission. In referring to the Third Avenue Railroad case, he said that the commission took the position that it should not approve securities that would be issued to the public unless a fair return could be earned on such securities. Mr. Maltbie said it was wise to avoid reorganization if possible. The commission had been trying, without surrendering at all the rights of the public, to enable one company to work out its affairs without recourse to reorganization. Over-capitalization, he said, was an injustice to the investor as well as to the public. It had the effect of causing managers to earn returns on the capitalization at the expense of the service.

TESTIMONY OF F. L. STETSON

Francis Lynde Stetson, of J. P. Morgan & Company, testified on Dec. 16. He said that the issue of excessive obligations by corporations destroyed their credit and thus caused deterioration of their service. He said that the official who made the rates would take, in the absence of governmental regulation, all that the traffic would bear up to the point where the shipper would find it cheaper to transport his goods by wagon. Rates had no relation to capitalization, he said. If there was an opening for a competitive road, the advantage of the situation would rise above all other conditions and such a road would be constructed. He had not reached a point where he believed the principal right of Congress was to regulate commerce. As between the two evils of State and national regulation, he preferred to maintain local regulations even though they infringed to some extent upon the uniformity of the treatment of interstate commerce. It was more important that the States should develop roads for the localities within their borders than for other States. The preponderant interest of each State was in its own local methods of distribution.

Mr. Stetson said that the vast system of railroads of the country had developed without any national interference. He looked with great question upon the public service commis-

sion law of New York State when that measure was enacted. When the law was administered as it had been in the Second District he was entirely satisfied. It had been administered reasonably and he would be sorry to see it repealed. Conditions might exist under which a railroad would have to get what it could for its securities. The law could not compel the payment of more than intending purchasers were willing to pay.

Mr. Stetson referred to his well-known suggestion that the dollar mark be sponged off the face of stock certificates. He said that the par value of $100, even if stock was issued at that figure, was a vanishing truth, as the price in the market was different five minutes afterward. He saw no reason to believe that assumption by the federal government of the power to regulate the capitalization of State corporations would measurably improve the conditions of transportation, which were pretty good. Under a permissive statute corporations might issue shares of stock bearing no par value, but representing a proportionate interest in earnings and assets. The disappointment of the public was keener when bond interest was passed than when a dividend payment on stock was passed, but he did not know that there was any more distress in one case than in the other. The great combinations had rendered business more stable. There had been no great industrial failures since 1901, although previous to that, when many small companies existed, panics had started in various parts of the country whenever trouble developed in a small plant.

In conclusion Mr. Stetson emphasized that he was utterly opposed to federal regulation of securities and that he had not the slightest belief that the government had any right to regulate securities.

TESTIMONY OF F. W. STEVENS

F. W. Stevens, chairman of the New York Public Service Commission, Second District, who gave his views on Dec. 16, said he wished to go on record as saying that, in his judgment, a system of national regulation of securities could not be expected to meet with the success which its advocates thought it would. It was an open question whether it would be a physical possibility for any commission to handle the multitudinous details involved. It was also a question whether regulation of this character would not make local interests entirely subservient to general interests. The commission had seen very few evils in interstate traffic as compared with those in interstate traffic. Local interests were apt to be neglected.

Mr. Stevens said that he personally favored the elimination of the dollar mark from securities. He thought that this plan was entirely practicable from an accounting standpoint. In capitalization there was too great a tendency to follow a rigid system. No system of capitalization was worth anything unless it would attract capital to an enterprise. To attract money to an established road and to attract it to a new enterprise were two entirely different propositions. No one put money into the New York Central & Hudson River Railroad or the Pennsylvania Railroad except as an investment. A new enterprise was more or less in the nature of a gamble. The chances were too much against it for it to attract capital by offering a return of simply 5 per cent.

Mr. Stevens said that the commission had recognized promoters' profits as entirely legitimate, based on services rendered in the organization of the company. It had authorized the issue of stock for such services on principles with which it was entirely satisfied. Since the law creating the commission had been passed the financial situation had been such that it was not possible to say whether the prevention of the issue of stock as a bonus to promoters had prevented the construction of new properties. The administration of any new theory such as that embodied in the public service commissions law must involve, at first, a period of uncertainty and doubt. Capitalists would wait to learn whether the law would be administered wisely or unwisely or in a spirit of helpfulness or destructiveness. In addition there had been a world-wide demand for floating capital for conversion into fixed capital. This had been in excess of the supply. The demand was in excess of anything that had ever been known in the history of the world before. Railroads had extraordinary difficulty in securing capital. They could secure more capital if they offered more interest.

If a federal commission was to regulate securities it should see that the capital desired was really required, that it was obtained and that it was used for the purpose for which it was obtained. The function of such a commission should not be to interfere with the functions of the directors of corporations, but to afford publicity. The directors should judge as to whether a scheme should be entered into. If the New York commission found a small corporation entertaining a proposition that was not a good business proposition it would confer with the officials and point out a better way. It would never think of doing that with a large corporation. The disadvantages of federal regulation of securities would overcome any advantages which Mr. Stevens had been able to see. It was to be regretted that the capitalization of corporations incorporated by States should be regulated or controlled by the federal government. On the other hand, Mr. Stevens favored State regulation.

HEARING ON INTERURBAN OPERATING METHODS BEFORE ILLINOIS COMMISSION

Thirty representatives of interurban railroads attended a hearing before the Illinois Railroad & Warehouse Commission at Springfield, Ill., on Dec. 20, for the purpose of discussing operating methods. The call for the meeting was published in the Electric Railway Journal of Dec. 17, 1910, page 1201.

Orville F. Berry, chairman of the commission, presided at the meeting. He explained the reasons for the absence of Governor Deneen and the other members of the commission. No definite program for the meeting had been prepared, but it was the desire of the commission to receive suggestions for consideration. Commissioner Berry read an address giving the general views of the commission. An abstract follows:

"The Illinois commission is very deeply interested in the welfare of the commercial interests of the State and it can render no better service to the people than to see that all means of transportation are brought to the highest standard. In bringing about this result there are three things which the commission should consider:

"First, that the movement of both passenger and freight traffic be prompt. Second, that the transportation agencies be conducted in just as safe a manner as the extent of human ingenuity will permit. Third, that a state of affairs should exist which would enable the transportation lines to earn a sufficient return on their investment to bring about this ideal standard of operation.

"One reason for the present undesirable reputation of the roads is because publicity has been limited in the past. The policy of secrecy is disappearing rapidly and better conditions are expected. In order to familiarize itself with the situation and improve existing conditions the commission has been giving special attention lately to interurban lines. The meeting is called in order that the commission may receive suggestions from operating officials in an informal way. Material improvement had been found by the commission lately in the methods of handling traffic. It is desirable that this should continue and the suggestions of the commission, designed to bring about better methods and results, are as follows:

"Employ no man without a preliminary and thorough investigation of his character. Before being given absolute charge of trains motormen should have as long experience as possible. Motormen should not assist in caring for baggage, mail, etc., carried on their trains. Motormen should have comfortable compartments. The construction of double track at curves and the installation of automatic signals should be considered and worked out as rapidly as possible. The commission is delighted with the improvements of the lines of the Illinois Traction System making for greater safety of opera-

tion. The commission recommends that responsibility regarding rules be fixed in every case upon certain individuals. Uniform signals should be adopted, if possible, throughout the State. The roads should instruct their men thoroughly before placing them on cars."

Commissioner Berry then presented figures showing the development of interurban railways in the State since 1903. He congratulated the public on the character of the men operating the roads as executives and minor employees and asked for closer co-operation between the public and the corporations.

After the presentation of Commissioner Berry's statement a discussion took place in which the officials of the interurban railways and representatives of the commission participated. The discussion at first was on the subject of the training of transportation employees.

Edwin C. Faber, general manager Aurora, Elgin & Chicago Railroad, said that no roads employed trainmen without preliminary examination and that careful training and inspection were most important factors.

H. E. Chubbuck, vice-president executive Illinois Traction System, described the comprehensive system by which the mental, moral and physical qualifications of employees of that company were determined. He said that the chief surgeon of the company was in continuous consultation with 70 local physicians, who examined the men. In the judgment of Mr. Chubbuck, the selection and training of employees was the most important factor of interurban railway operation. He told of a clause in the new contract with the employees under which brakemen are required to work up to other positions. A thorough course of education was provided. Schools of instruction on the system were part of the methods adopted by the management to educate the men.

C. F. Handshy, general superintendent Illinois Traction System, said that he did not favor the employment of steam railroad men who had had more than one year's experience. Such men would not assume responsibility and they were not sufficiently careful in the operation of interurban cars. They did not understand the short curves or realize the differences of operating conditions between steam and electric interurban lines. Therefore, such men did not provide exactly the best material for motormen of interurban railways.

Mr. Handshy favored the employment as interurban motormen of street railway employees who had had one or two years' experience. He said that such men learned the rudiments of interurban operation by observation. He described the system of employment on the Illinois Traction System. After a surgical examination and study of the rules new men were trained under regular motormen. The rules were made as simple as possible. A new employee continued to work under a regular trainman until he could pass rigorous examinations of the rules and as to his physical condition. Records were kept for every man on the system. This practice had achieved good results. The company had had an instruction school for three years in which the men discussed the rules, and all points which they did not understand were made clear. The men took an interest in the school. It had been demonstrated that the existence of the school had raised the standard of employees. A careful investigation of the character of applicants was made before they were employed as trainmen. References were secured from five non-employers and five former employers and information was required as to the places in which the men had been employed for the previous 10 years.

William Kilpatrick, secretary of the Illinois Railroad & Warehouse Commission, cited an example of a steam railroad wreck which had illustrated the need for careful supervision over the habits of employees.

Mr. Handshy said that candidates for positions as trainmen should be given a course of instruction in the shops.

B. E. Merwin, general superintendent Aurora, Elgin & Chicago Railroad, described the methods of selection of men followed by that company. This company required references and information as to previous employment similar to that mentioned by Mr. Handshy. The company also studied the character and habits of the men and subjected them to a physical examination. New men were instructed on each interurban division of the system for a total period of about five weeks. Afterward they were employed on milk trains as assistants until they knew the main-line schedules. They were required to pass a written examination of 300 questions regarding the rules and must pass with a grade of 95 per cent. The men were then given a talk by the superintendent. This company did not employ men who had not had previous steam or electric service. Some steam railroad employees had been found to be satisfactory, especially younger men who desired to be near their homes. The majority of the trainmen had been developed by experience on the property.

C. F. Hewitt, general superintendent East St. Louis & Suburban Railway, said that his general methods were similar to those mentioned by the other speakers and were equally thorough. He did not favor the employment of steam railroad men for interurban service. No men were put to work until their references had been investigated. They were kept in the shop one month and must pass an examination on the car equipment.

W. W. McCullough, general manager Rock Island Southern Railroad, said that he employed steam railroad men, who had to be approved by the superintendent of the company and by the steam superintendent at Rock Island. He had found steam railroad employees satisfactory, although men employed on his direct-current division had been unable to pass the examination for steam railroad service.

Mr. Chubbuck suggested that the conditions prevailing on the Rock Island Southern road, which secured 70 per cent of its gross earnings from freight traffic, were not comparable with the conditions existing on ordinary interurban railroads. He said that the McKinley line at Cairo operated over three miles of track of the Illinois Central Railroad, using the staff system of the Union Switch & Signal Company. For this service interurban trainmen of the regular class were employed and no difficulty had arisen. He repeated that the selection of employees was one of the most important of the vital questions facing managers at present. The interurban railways did not want the class of steam railroad employees they could get. The better class of steam railroad employees would not work for interurban railways on account of the lower wages paid unless the family relations of the men required them to be at home each day.

H. A. Fisher, president Joliet & Southern Traction Company, gave the reasons why he had not employed steam railway men when the interurban line between Columbus and Springfield, Ohio, was constructed. He said that it was difficult for steam railroad employees to appreciate the important details of interurban service. He therefore hired brakemen and firemen who had not been in steam service long and used them for interurban operation. These men were satisfactory because they were young and could adapt themselves to new conditions.

J. R. Blackhall, general manager Chicago & Joliet Electric Railway, described the employment of trainmen who were graduated to the interurban service after three or four years' experience in city service. He said that it was difficult to get satisfactory service from old steam railroad men on account of the wide difference in the characteristics of the steam and interurban service. He told of the frequent lectures and instructions given to employees.

T. F. Grover, general manager Terre Haute division, Terre Haute, Indianapolis & Eastern Traction Company, described the employment of trainmen on that system. He said that the employment of a steam railroad man for interurban service could be compared with the employment of a clerk in a butcher store to sell silk in a dry-goods store. In his experience of 20 years, the poorest motormen had been old steam railroad men who did not realize that they must watch every crossing because they had been accustomed to the habit of stopping only for stations and signals. Interurban men on his system were selected from his best city employees. In addition to the general methods of employment which Mr. Grover described he said that applicants were required to sign an affidavit that the

information in their application blank was correct. The same application had to be signed by three business men.

Mr. Chubbuck asked Commissioner Berry how much power the commission had to support the roads if a uniform application blank should be adopted. Could the commission take special action on this subject and require the applicant to swear to the correctness of his blank and to file a copy at the State House? A similar procedure might be adopted for the examination of applicants by physicians.

Commissioner Berry indicated that he approved this plan and thought that its adoption would reduce accidents.

Mr. Chubbuck suggested that the commission might be of value in the investigation of men. He said that the railroads wanted to secure the best men and desired help in getting them. If some State supervision should be connected with the application blank men would feel the importance of the service. State supervision of this nature need not be in the nature of a license. The Illinois Traction System had relied at times on decisions of the Interstate Commerce Commission. Mr. Chubbuck also suggested that the Illinois commission might have a brief set of fair rules upon whose adoption it could insist with all roads that were incorporated. One such rule would be a prohibition against drinking.

W. B. Tarkington, general superintendent Chicago & Southern Traction Company, discussed the relations between employers and employees, spoke of local situations and gave opinions based on his previous long experience with steam railroads.

Commissioner Berry discussed the authority of the commission, which was limited because based on an act passed in the year 1871, to which only a few amendments have been made since. However, he expected that additional powers would be given to the commission by the next Legislature. He favored the suggestions made by Mr. Chubbuck. The commission expected to present to the Legislature a bill providing that its powers should be enlarged greatly. It wanted the support of the railroads and also of the public. He said that an applicant who signed a false application blank was in the same class with a man who obtained credit at a bank by false representation.

Mr. Hewitt announced that a meeting would be held on Jan. 19, 1911, to form an association of electric railways in Illinois.

John Leisenring, signal engineer of the Illinois Traction System, gave a full description of the signals which are now being installed on the Illinois Traction System. They include continuous automatic blocking for 100 miles of track and also protection for all bad curves on the system. He described the methods by which the signals are operated. The construction was arranged so as to give the danger signal for any derangement. Four signals were provided at each siding.

The probable cost of signals was given by Mr. Chubbuck as up to $3,000 per mile, according to the traffic and sidings.

Mr. Leisenring explained that an installation of a similar character but somewhat cheaper could be made if alternating propulsion current should be used, although operating expenses would be higher. He described the reactance bonds and said that the company had an automatic train stop under consideration.

Mr. Faber said that the Aurora, Elgin & Chicago Railroad had recently installed two blocks covering a total of 1½ miles at an approximate cost of $7,000. The cost of other installations would vary with the situation.

Mr. Chubbuck said that the dispatcher signals of the Blake Signal & Manufacturing Company were not so expensive and had been found satisfactory. They were being installed on 200 miles of track and were similar to those approved recently by the Railroad Commission of Indiana. They facilitated the operation of trains. The company was also installing Baird Electric Company signals on 100 miles of track.

A general discussion followed as to the applicability of automatic train stops to interurban operation. The consensus of opinion was that automatic train stops had not been sufficiently perfected to be adapted to interurban service.

Marshall E. Sampsell, Central Illinois Public Service Corporation, suggested that a committee of five be appointed to frame a summary of the suggestions made at the meeting for the benefit of the roads and the commission and that later the summary be brought before the Legislature to assist in the enactment of legislation. This suggestion met the approval of the commission and the roads represented. The officials of the railways requested that the five men be chosen at the organization meeting of the proposed Illinois association, to be held in Chicago on Jan. 19.

Mr. Chubbuck asked the commission if it would recognize the committee as assistants to the commission in a semi-official capacity.

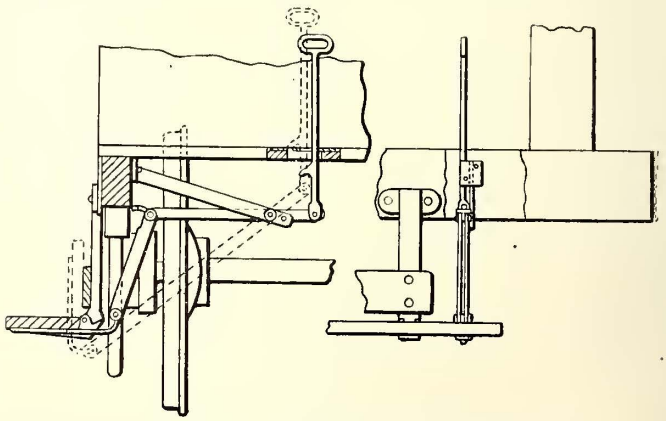
Commissioner Berry said that the commission would so recognize the committee. He said that the commission had tried to disabuse the people of the notion that electric railways were operated by inexperienced men. He also asked that the names of all railways be placed on a mailing list for copies of the synopsis of the deliberations of the commission published regularly.

H. A. Fisher, president Joliet & Southern Traction Company, described the installation made by the United States Electric Signal Company on his road as very satisfactory. This cost up to $250 per mile and was safe for speeds to 40 m.p.h., but might need further development for higher speeds on account of the trolley contact, which, however, was now being improved. This signal system would undoubtedly be satisfactory for many of the smaller roads.

Commissioner Berry, in closing the meeting, said that Governor Deneen would recommend in his message to the Legislature that legislation be enacted to enlarge the powers of the commission. He did not want the conditions made oppressive for the companies and would call another meeting before the bill was prepared. He desired that the roads see that the recommendations made were rational. He thought that it was better for the railroads to have a good commission with strong powers to handle some affairs which were now in an unsettled state. The committee of five to be appointed by the interurban roads would work with the commission in the preparation of the bill.

FOLDING STEP USED AT FORT SMITH, ARK.

The accompanying drawing shows a step adjuster, patented by John Nesbitt, foreman of repairs, the Fort Smith Light &



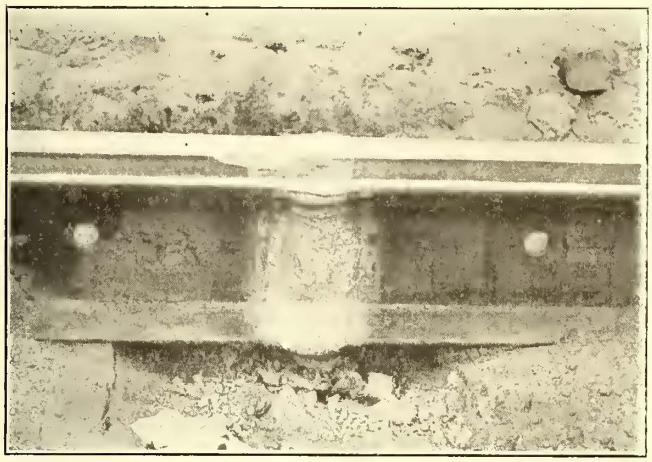
Folding Step Used by the Fort Smith Light & Traction Company for Open Cars

Traction Company, Fort Smith, Ark., and installed on the open cars of this company. The vertical operating handle shown in the drawing is placed at the right front end for each direction of running. To fold the step against the riser, the motorman simply raises the vertical handle until the catch on its lower portion is drawn above the platform and moved over as indicated by the dotted lines. By pulling the handle back slightly and dropping it, the step is made return to its original horizontal position.

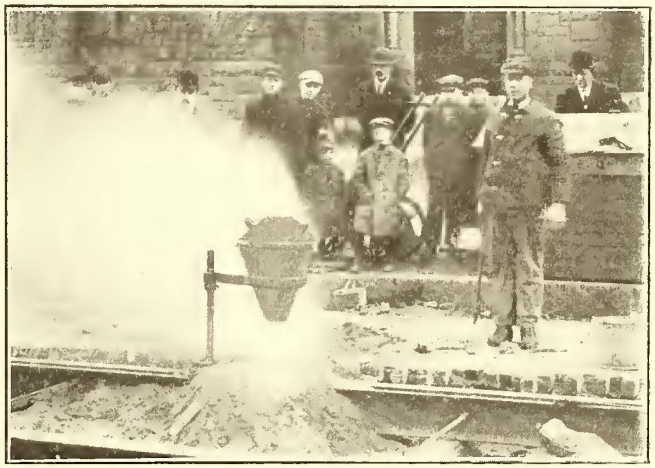
WELDING ENTIRE RAIL SECTIONS AT HOLYOKE, MASS.

BY G. E. PELLISSIER, ASSOCIATE MEMBER, A. S. C. E., SUPERINTENDENT OF THE GOLDSCHMIDT THERMIT COMPANY

Some thermit rail welding has recently been completed for the Holyoke Street Railway Company, of Holyoke, Mass., which, it is believed, marks an important advance in the art of rail welding, as the long-sought-for object finally was attained, namely, an absolutely continuous rail. As is known to everyone who is at all familiar with the welding processes now in use, including the thermit process as first applied in this country, none of them produces a really continuous rail because only certain portions of the rail are united, the head usually being left unwelded. Since one of the first essentials of the perfect track is a smooth, continuous rolling surface, the writer has always been of the opinion that the welding of the head of the rail was necessary in an ideal welded joint. This object has been attained by the new method recently used in making the welds at Holyoke.



Holyoke Welding—Completed All-Rail Weld

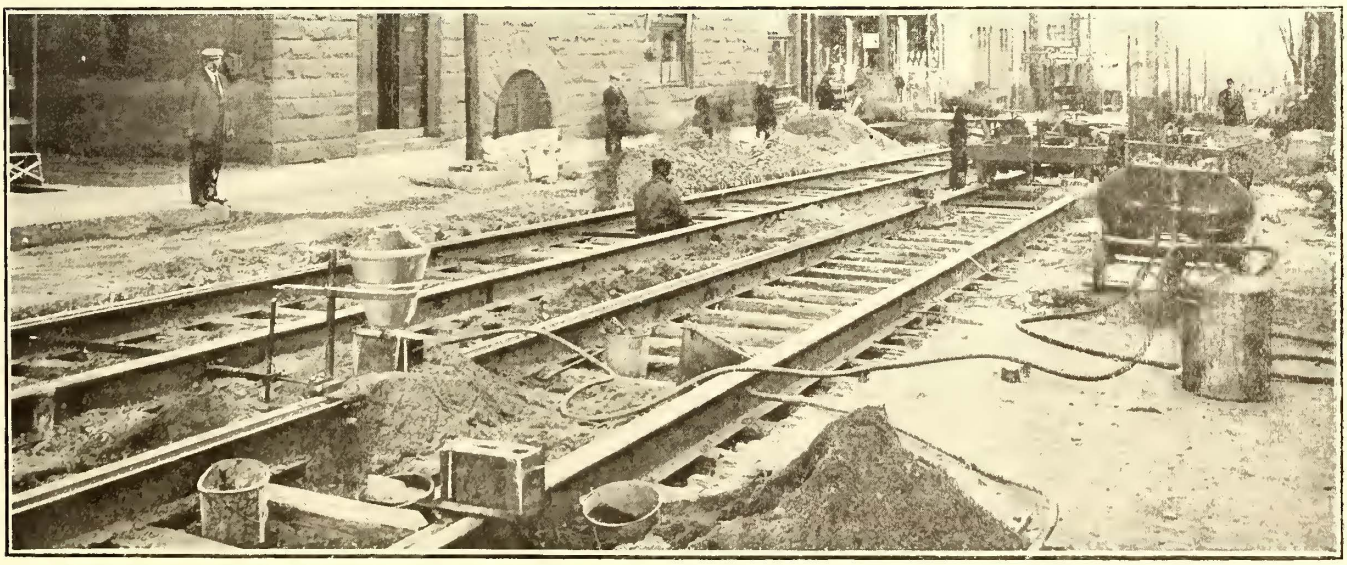


Holyoke Welding—Pouring Thermit Steel Into the Mold

Briefly stated, this method is as follows: The rails are first laid with a space of approximately ¾ in. between the ends and are aligned and surfaced by means of temporary fishplates. After the concrete and paving have been put in with the exception of a small portion around the joint (2 ft. x 2 ft.) the ends of the rail are surrounded by a three-part mold previously made on a suitable wooden pattern. In addition to the usual pouring gate and riser this mold has a hole at the center for inserting a preheater. After the molds are placed in position and secured by means of clamps and by packing sand around the mold boxes to prevent the escape of the molten metal, the interior of the mold and the ends of the rail inside the mold are brought to a red heat by means of the preheater, which is inserted at the preheating hole.

While the preheating is going on, a crucible into which the proper amount of thermit has been placed is suspended over the mold. As soon as the preheating has been accomplished the preheating hole is closed with a sand core and the steel resulting from the thermit reaction is tapped into the mold. After the weld has cooled the mold is taken off and the portion of metal above the head of the rail is removed. The surface of the rail is finished by means of a grinder.

While it will be seen from this description that the entire operation itself is a simple one, the development of this method involved the solution of several rather difficult problems. The most important of these problems were the design of a suitable preheater and rail grinder and the determination by experiment of a thermit steel which would have the same hardness and wearing qualities as the steel to be welded.

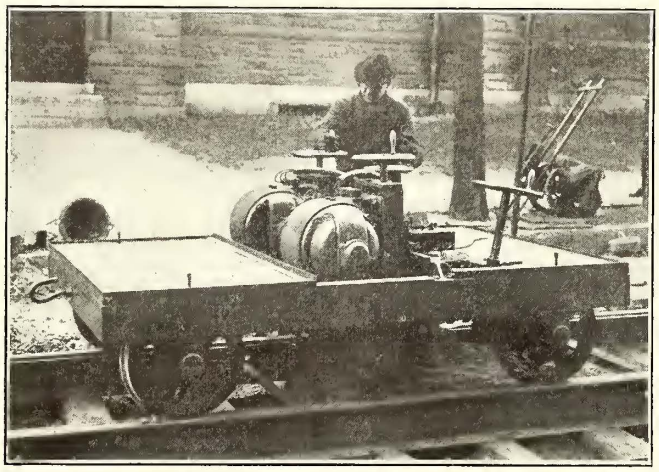


Holyoke Welding—General View of Work, and Apparatus, Including the Preheater Applied

The Holyoke preheating outfit consisted of a 5-hp motor belted direct to an Acme blower manufactured by the P. & H. Roots Company. The air from the blower was piped to a gasoline preheater designed by the writer. With this device it is possible to heat a 9-in. rail to a bright red heat in 20 minutes.

The rail grinder used was also designed by the writer. It consists of a truck mounted on two axles. This truck has a

cross rail, similar to that of a planer, which is mounted in the center and parallel to the axles. This cross rail carries two grinder units (one for each rail), consisting of a 5-hp motor belted directly to a 14-in. emery wheel, the contour of which is such as to grind the desired surfaces. The grinder units are so arranged on the cross rail that each has an independent cross and up and down feed. This feed is very sensitive in order to give any desired accuracy in grinding. The entire truck is moved backward and forward on the track by means of a suitable hand-operated worm gearing which can be readily thrown out of gear when it is desired to move the



Holyoke Welding—Rail Grinder Complete

grinder from one joint to the other. One of the accompanying illustrations shows the grinder in action.

No attempt will be made here to describe the experiments made in arriving at a suitable thermit steel. It might be stated, however, that the one finally adopted has been proved by repeated strength tests, hardness tests and analysis to be at least equal to that of the usual rail steel.

A gang of only four men was employed in executing the welds, which were made on rail section No. 273, Pennsylvania Steel Company, at the corner of High and Appleton Streets, Holyoke. A small gang had to be used because the rail welding connected to the three ends of a piece of special work in the busiest part of the town, so that it was impossible to prepare many joints at once. Even under these arduous conditions these four men were able to make 10 complete joints in 9 hours. There is no reason why the same number of men could not make at least 15 joints in the same time under more favorable conditions. One of the illustrations on page 1245 will give an idea of the way the work was carried out on the track.

The Holyoke Street Railway was the first company in the United States to use thermit for rail welding, as the officials of that company early realized the necessity of something better than fishplates for paved streets. On this account it is particularly gratifying to the writer that this company was also one of the first to appreciate the advantages of the perfected method hereinbefore described.

THIRD AVENUE RAILROAD BEGINS OPERATION OF THE TWENTY-EIGHTH STREET LINE IN NEW YORK WITH STORAGE BATTERY CARS

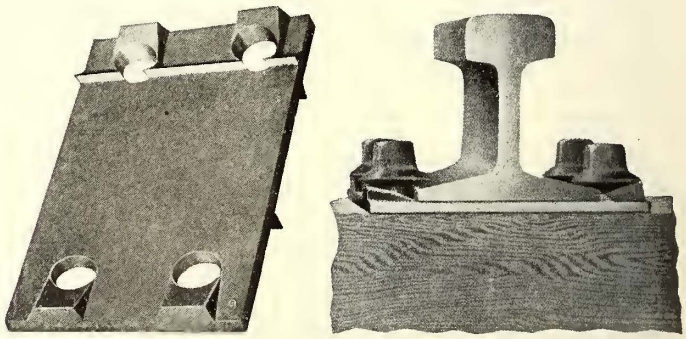
An arrangement has been made by the Third Avenue Railroad, New York, with Joseph B. Mayer, receiver of the Twenty-eighth Street & Twenty-ninth Street Crosstown Railroad, New York, whereby storage-battery cars will be operated on the Crosstown Railroad with free transfers given at all intersections of the Crosstown Railroad with the Third Avenue Railroad. Free transfers likewise will be given by the Crosstown company. The agreement went into effect on Sunday, Dec. 18, and will be continued if the expected increase in traffic materializes. The new transfer arrangements will be of great benefit to the public of New York because the Crosstown line runs on the west side to the important New Jersey ferry at Twenty-third Street and on the east side to the Thirty-fourth Street ferry, which connects with the Long Island Railroad. The transfer points are on Avenue B, Third Avenue and Tenth Avenue, so that both east side and west side passengers will be benefited.

In order to make the service as attractive as possible the Crosstown line has been equipped with some of the Gould storage battery cars which were recently built and equipped by the engineering department of the Third Avenue Railroad. Fifteen to 20 of these cars will be available for this service as traffic conditions may warrant. The first storage battery cars of this type were placed in operation by the Third Avenue Railroad in March, 1910. Since that time seven additional cars have been placed in service on the 110th Street line. These cars are giving excellent service and are earning far more money than the original horse cars.

TIE PLATES FOR SCREW SPIKES

The present method of securing rails to cross ties by means of the old square or common spike is about the same as used originally. In fact, very little improvement over old methods had been attempted until the screw spike was introduced. Some of the larger steam railways and also the elevated railroads have used the new spike to some extent during the past few years but principally in an experimental way to determine its practicability. The introduction of screw spikes prompted the Spencer Otis Company, Chicago, Ill., to design a tie plate which would solve the problem of the proper application of the spikes and at the same time produce an ideal plate which would meet the following requirements: Insure a perfect bearing for the flange of the spike to both rail and plate; furnish reinforcement back of the spike, to prevent bending caused by the lateral movement of the rail; minimize spike cutting, caused by running rail; and finally include means for so applying the spike that it could be driven only in a vertical position.

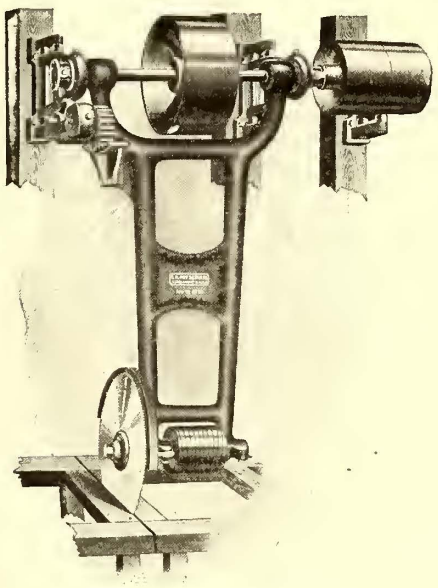
The company named states that it has succeeded in making tie plates to meet these requirements mentioned and in fact has been rolling such plates successfully at its Portsmouth (Ohio) mills for the past two years. The accompanying illustrations show the plate with the rail mounted thereon and also the plate itself. A glance at the illustration of "Economy" tie plate No. 9-R will show that it has a strong main body with a rail retaining shoulder and elevated bosses rolled on either end; these bosses have the same angle as the base of the rail and provide bearing for the flange of the screw spike and reinforce it to prevent bending and cutting. The spike holes in the bosses serve as guides or jigs when boring ties after the plates are in position under the rail. The plates are rolled from open-hearth steel with four longitudinal flanges or two transverse flanges on the bottom surface or are rolled perfectly flat on the bottom surface if desired. They are made to take any section of rail either A. S. C. E. or American Railway Association, section A or B. This company also makes other types of tie plates, screw spikes, rail joints, etc.



Tie Plates, Separate and Applied

A CAR SHOP SWING SAW

The J. A. Fay & Egan Company, Cincinnati, Ohio, is building for railway service the swing saw shown in the accompanying cut. Special attention has been given toward making the frame heavy and to using the very large main driving pulley required in the manufacture of heavy material. The automatic adjustable counterweight makes it easy to operate this machine and insures a quick return of the saw when released. The saw mandrel is fitted with an expansion bush saw flange, which permits the use of a saw having a slightly larger hole than the regular type. The journal bearings are self-oiling from chambers underneath. Each machine is furnished with a guard to which an operating handle is attached. With the largest saw practicable (56 in. diameter) this machine will cut off car woodwork material 19 in. square or 48 in. wide x 2 in. thick.



Railway Shop Swing Saw

HAND-OPERATED UNIT SWITCH CONTROL FOR PEORIA RAILWAY TERMINAL COMPANY

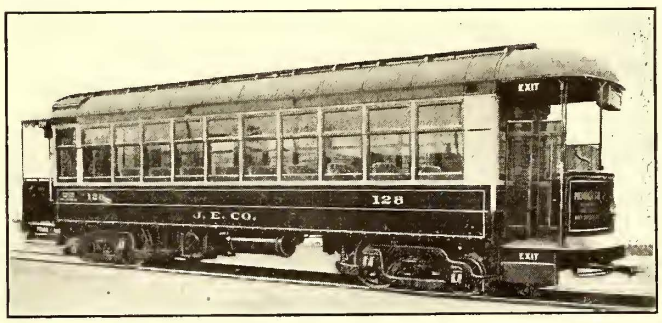
The Peoria Railway Terminal Company has recently added five double-truck passenger cars to its rolling stock. This company operates a standard gage interurban electric line between Peoria and Pekin. The new cars, which are 57 ft. over all and which when fully loaded weigh approximately 40 tons, are of the single-end type. The car bodies, complete with truck, were built by the McGuire-Cummings Manufacturing Company. The trucks are equipped with 36-in. wheels mounted on 6-in. axles with 7-in. gear fit arranged for a gear ratio of 18:69. It is expected that when operating on normal schedule the single trip will include six stops in the interurban districts and an average of six or seven stops in the 2.8 miles of city running.

Each car is fitted with a quadruple equipment consisting of four No. 304-A interpole railway motors, each motor having a nominal rating of 75 hp at 500 volts, or 90 hp at 600 volts. Hand-operated unit switch control is used on each car. The line switches and each unit of the control switch are actuated by air under pressure of 70 lb. per square inch. The only current flowing through the master controller is the small amount required to energize the electromagnetically operated needle valve which admits air to the air cylinders of the switch. Both the motors and the control equipment were manufactured by the Westinghouse Electric & Manufacturing Company.

PAY-AS-YOU-ENTER CARS FOR JACKSONVILLE, FLA.

The Cincinnati Car Company is now delivering to the Jacksonville (Fla.) Electric Company 10 double-end pay-as-you-enter type cars which have a number of interesting features. Some of these features are quite a departure in car building and are believed to give a car body of exceptionally light weight for the stability attained. The weight per seated passenger for the completely equipped car is 760 lb. This type of car was designed by C. O. Birney, of the Stone & Webster Engineering Corporation, of Boston, Mass., the general managers of the Jacksonville property. It is licensed by the Pay-As-You-Enter Car Corporation, New York.

The frame of this car is composed largely of structural steel. The side posts and roof carlines are formed of 2-in. x 2-in. x ¼-in. T-irons made in one continuous piece, extending from side sill to side sill and riveted thereto. The side sills are composed of 5-in. x 3-in. x ⅜-in. steel angles, extending the full length of car body, to which 3/16-in. x 15-in. steel plates are riveted in one continuous piece; this plate forms the lower side panel. The upper side panels are formed of No. 16 gage sheet steel, lined on the inside with 3/16-in. thick Agasote, which forms the interior wainscoting between side posts. The sides of car are additionally reinforced between the sash rail and the side sill by a 1½-in. x 1½-in. x ¼-in. steel angle which forms a seat for the cross seat wall brackets. The window rests are formed of 1½-in. x 1½-in. x ¼-in. steel angle capped with white oak. The flooring is of single thickness, 13/16 in. thick, with standard floor mat strips in the aisle. The roof, which is of the turtle-back type, is formed of ¼-in. thick Agasote covered with No. 8 canvas on the outside. This Agasote is bolted to the steel T-iron carlines. The ceiling inside of the car body is of carline finish, the roofing being painted a green shade which presents a handsome appearance.



Jacksonville Car—Exterior Showing Flat Roof

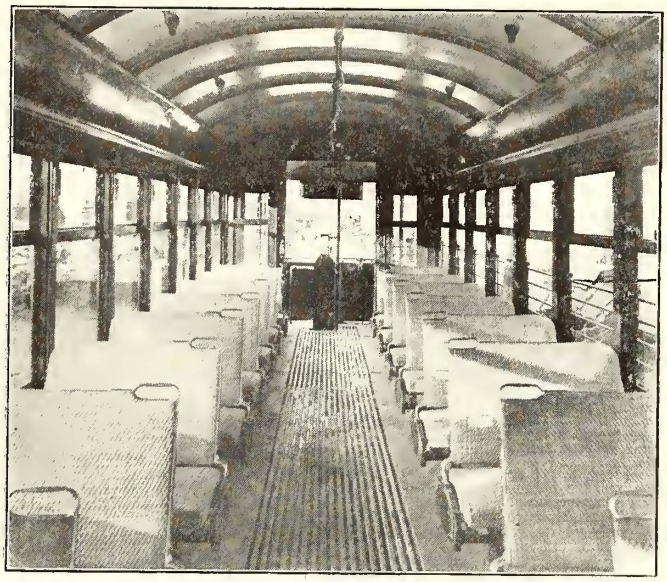
The interior finish of the car is of mahogany. There are 11 windows on each side of the car. The upper sash are formed by one continuous frame which extends for the full length of each side of car body, screwed to the outside of the T-iron posts. The lower sash, which are arranged to raise straight up behind the letter boards, are operated by O. M. Edwards No. 13-0 window fixtures and compression rollers.

The car is ventilated by means of 18 6-in. ventilators of the car builder's type, set in the roof alongside of the trolley boards. These ventilators are made so that they can be closed tight, opened part or opened all of the way.

The cars are arranged for single-end pay-as-you-enter operation, with a rear entrance and exit and a front exit. A Brill No. 2-B fare box is on the rear end of the car body. The rear bulkhead is located one window length in from the end sill, which novel arrangement permits a shorter platform than with the usual prepayment schemes. The rear bulkhead has independently operated double sliding doors. The front exit of the car is provided with a set of folding gates and a folding step which operate simultaneously under the control of the motorman. The car is completely closed by gates on the devil strip side. The seats, which are of Heywood Brothers & Wakefield manufacture, comprise 16 cross and four longitudinal rattan seats inside of the car and three wooden slat seats, two

of which are at the rear end between the bulkhead and platform and one on the front platform. The total seating capacity is 44 persons.

The general dimensions of the cars are as follows: Length over the corner posts, 29 ft. 6½ in.; length over all, 39 ft. 6½ in.; width over drip rails, extreme, 8 ft. 8 in.; height from top



Jacksonville Car—Interior, Looking Toward Conductor's Platform

of floor to top of roof, 8 ft. 0 in.; width of aisle, 36½ in.; width of cross seats, 34 in.

The weights of the car and equipment are as follows: Car body complete with hand brakes, 12,179 lb.; weight of fare box, 100 lb.; weight of air brake equipment and piping, 1730

Jacksonville Car—Exit Gate, Motorman's Platform

lb.; weight of body electrical apparatus, conduit, etc., 1463 lb.; weight of two GE-219 motors, 6000 lb.; weight of two Standard maximum traction trucks, 12,000 lb.; weight of car complete ready to run, 33,472 lb.

The special equipment of the cars includes the following: Cast steel bolsters; the car builder's signal bells and radial drawbars; Knutson trolley retrievers; United States Headlight Company's incandescent headlights; Hunter illuminated signs; P. Wall Manufacturing Company's 14-in. foot gongs; Forsythe protected groove pantasote curtains; Sterling Meaker hand brakes, and Standard Motor Truck Company's No. 0-45 maximum traction type trucks.

The electrical equipment consists of two GE-219 motors, with two K-36 controllers. The straight air brakes are also of General Electric manufacture. All of the power wiring is run in iron-armored conduit.

NEW HAMPSHIRE ELECTRIC RAILWAYS TELEPHONE SYSTEM

The New Hampshire Electric Railways is using an extensive Western Electric telephone system for train dispatching, the interconnection of the repair shop with the car houses, the interconnection of the power house with the rotary stations, and for general purposes, such as reporting defects in cars, track and overhead lines and ordering supplies.

The telephone system is divided into two general divisions corresponding to the divisions of the road, namely, the eastern and western divisions. In the eastern division, which is subdivided into the eastern New Hampshire and eastern Massachusetts divisions, the main switchboard is located at Amesbury, with pony switchboards at Plaistow and the Amesbury and Salisbury car houses. This division covers about 60 miles of road and is equipped with 28 telephones. The western division is made up of five subdivisions: Canobie Lake, Haverhill-Salem, Salem-Pelham, with branches to Nashua and Lowell; Salem-Lawrence, and Haverhill Junction.

The main switchboard is in the Salem car house, with pony boards at the Pelham car house and at the general offices of the company at Haverhill. This division of the road is 47 miles long and is equipped with 30 telephone stations, in addition to those at Canobie Lake Park.

There are also two other telephone circuits, one connecting the car house at Salem with the machine shop and the houses of the master mechanic and superintendent, the other a circuit paralleling the high-tension transmission lines, which supplies the power for the road. The power for operating the trains is generated at Portsmouth, N. H., and transmitted at 13,200 volts to 600-volt substations at Dover, Stratham, Plaistow, Amesbury, Salem, Methuen, Pelham and Hampton. The telephone line paralleling the transmission line is 55 miles long and is equipped with instruments at each rotary station. The high-tension patrolman always carries a portable telephone and by cutting into the line can connect with any point desired. The dispatchers at Salem and Amesbury can keep in constant touch with the power house at Portsmouth and the rotary stations.

Although the Canobie Lake division is but 1.5 miles long it is one of the busiest divisions during the summer on account of the amusement park at Canobie Lake. It is estimated that approximately 500,000 people visited this park in 1910.

The dispatcher for the western division is located at the Salem car house, whence he controls all the cars on this division. The telephone equipment here consists of a switchboard of 30 line capacity, with trunk lines running to pony switchboards at the Haverhill and the Pelham car houses. At each siding and at other important points along the line there is a telephone booth in which are installed a telephone set, a lightning arrester and an Egry triplicate copying machine. The conductor after receiving his orders from the dispatcher writes them out and then repeats them back to the dispatcher, who gives his O. K. and puts down the time on his train sheet. The dispatcher enters his orders on a regular train sheet similar to that used on steam roads, and he is held responsible for the service. This system is used on both the eastern and western divisions when extra cars are run over the various lines. When the regular schedules are in force all cars pass at designated points and dispatcing orders are not given, except for the control of line crews during delays or when accidents occur.

News of Electric Railways

Meeting of Interstate Electric Railway Association

The committee consisting of G. W. Quackenbush, of the Illinois Traction System; H. A. Fisher, of the Joliet & Southern Traction Company, and C. E. Flenner, of the Aurora, Elgin & Chicago Railway, which was appointed at a meeting held in Chicago, Ill., on Dec. 1, 1910, to reorganize the Interstate Electric Railway Association, has called a meeting to be held in the assembly room of the Great Northern Hotel, Chicago, Ill., at 10 a. m. on Jan. 19, 1911, to consider plans to reorganize the association so as to extend its scope of usefulness to embrace all departments of electric railway work. Those who propose to attend the meeting are requested to address C. E. Flenner, Wheaton, Ill., as soon as possible so that the probable attendance can be determined in advance of the meeting. The following companies were represented at the meeting held on Dec. 1, 1910: Chicago, Ottawa & Peoria Railway, Illinois Traction System, Joliet & Southern Traction Company, Bloomington, Pontiac & Joliet Electric Railway, Aurora, Elgin & Chicago Railroad, Elgin & Belvidere Electric Company, Chicago, Aurora & DeKalb Railroad, DeKalb, Sycamore & Interurban Railroad and the Chicago & Milwaukee Electric Railroad.

Tentative Program Wisconsin Electrical Association

The annual meeting of the Wisconsin Electrical Association will be held at the Hotel Pfister, Milwaukee, Wis., on Jan. 18 and 19, 1911. In a communication addressed to the members of the association under date of Dec. 14, 1910, Clement C. Smith, president of the association, outlined the following tentative program and requested suggestions in regard to additions or changes:

Paper, "Publicity Campaigns," by Ernest Gonzenbach, president of the Sheboygan Light, Power & Railway Company. Mr. Gonzenbach will deal with the question of newspaper advertising and other methods of publicity.

Paper, "Some Principles Established by the Wisconsin Railroad Commission," by Edwin S. Mack, of Miller, Mack & Fairchild, attorneys, Milwaukee. Mr. Mack is counsel for several members of the association and has had extended experience in dealing with railroad commission matters. His paper will review rate making, going value and other subjects.

Paper, "Electric Meter Testing," by A. J. Goedjen, superintendent of tests of The Milwaukee Electric Railway & Light Company.

Paper, "Ornamental Street Lighting." (Not yet assigned.)

Paper, "Insurance." (Not yet assigned.)

Paper, "Electric Railway Repair Shop Practice," by W. J. Kelsh, master mechanic and chief engineer of the Eastern Wisconsin Railway & Lighting Company and Wisconsin Electric Railway.

Paper, "Transformers and Their Proper Arrangement." (Not yet assigned.)

Paper, "Storeroom and Stores Records of Lighting and Railway Properties." (Not yet assigned.)

Commission Favors Interborough Rapid Transit Company's Proposal

The Public Service Commission on Dec. 20, 1910, declared itself in favor of the proposal of the Interborough Rapid Transit Company for the extension of its existing lines, as against the plans for the tri-borough subway, on which bids were received on Oct. 27, 1910, by the commission and then held in abeyance. In a letter to the Board of Estimate, dated Dec. 20, 1910, the commission said that it purposes to conclude the negotiations with the Interborough Rapid Transit Company as speedily as possible, if the board approves. In its letter the commission states that there are "certain features" of the Interborough Rapid Transit Company's proposition that will have to be modified. They concern the laying out of certain routes now not on the map and the modification of others. For instance, it was pointed out that the Interborough Rapid Transit Company proposes to make the Eastern Parkway line in Brooklyn a four-track tunnel, whereas it is now laid out for only two tracks. The regular course for the laying out of routes will have to be followed in order to make such change legal. It is also understood that the commission is in favor of some alteration in the terms for the operation of the Fourth Avenue subway in Brooklyn, the stipulation of the company being that the city guarantee to make good any losses that might result from that division. The proposal of the Interborough Rapid Transit Company to the commission was reprinted in the ELECTRIC RAILWAY JOURNAL of Dec. 10, 1910, page 1156, substantially as presented to that body.

On Dec. 19, 1910, the Brooklyn Rapid Transit Company filed a new offer with the Public Service Commission to operate the Centre street loop. The company proposes to run certain lines across the Williamsburg Bridge and through the loop, elevated trains to run on the two westerly subway tracks and trolleys on the two easterly tracks. While it is proposed that the trains go as far as the Brooklyn Bridge, the plan is to stop the trolleys at Canal street. Provision is also made for a possible connection of the loop with the Brooklyn Bridge, if a feasible plan is devised in the future. The company proposes that the city shall provide the loop complete for use, with stations, signals and all other appliances necessary for operation by the concern with its present equipment. On its part, the company will provide a power substation, with feeders and connections between it and the main generating station and between it and the subway proper. The city must make the connection between the Williamsburg Bridge and the loop required for the operation over the bridge and through the subway of the maximum number of cars and trains demanded by the service. The city must also provide four terminal tracks, with platforms, at Chambers Street, for the exclusive use of the Brooklyn Union Elevated Railroad. Terminal facilities must be provided at Canal Street for the trolleys. The company proposes that the contracts for operation and maintenance of the loop shall run for 20 years, with the privilege of renewal for a similar period. It is also proposed that the rights of the company on the bridges be made co-terminus with its subway rights. The company offers to pay for its rights in the loop $45,000 the first year, this amount increasing annually to $260,000 in the tenth year. After the tenth year the company proposes to pay $275,000 a year. In case the city fails to strengthen the Williamsburg Bridge so that it can carry 10-car trains before the beginning of the sixth year, the rental amounts will be reduced by $80,000 a year. If the city will connect the subway with the Brooklyn Bridge, so that elevated trains can be run from one to the other, the company is willing to pay $50,000 the first year and $350,000 the tenth year. After the tenth year the company would pay $375,000.

The Public Service Commission on Dec. 19, 1910, received from the Manhattan Bridge Three-Cent-Fare Line an offer to operate the Centre Street Bridge loop subway, which is now practically completed except for a small section running down under the site of the new Municipal Building at the Brooklyn Bridge Plaza. The Manhattan Bridge Three-Cent-Fare Line recently obtained a certificate of public convenience and a necessity from the Public Service Commission to operate a line of cars over the Manhattan Bridge and thence northerly to Canal Street and through the thoroughfare to the Hudson River, thus giving for 3 cents a ride from Flatbush Avenue, Brooklyn, to the westerly end of Canal Street. This certificate, however, was conditioned upon the company's obtaining a working arrangement with some one of the existing Manhattan street railways for the use of its tracks on the Manhattan side. It is understood that the company has not succeeded in making the trackage arrangement necessary to make its certificate of public convenience good. It offers to construct three lines—one over the Williamsburg Bridge, entering the northerly end of the bridge loop subway and continuing down to the Manhattan Bridge, running over that to the terminal at Cham-

bers Street. Another line is to start at the plaza at the Brooklyn end of the Williamsburg Bridge and is to follow the bridge loop subway as far as Canal Street, turning there and running over the Manhattan Bridge to the Flatbush Avenue terminal. Another line is to start at the Brooklyn Bridge, running from that point to the Centre Street subway and thence over the Manhattan Bridge to the Flatbush Avenue terminal. This offer involves the provision by the company for cars, rails and other equipment in consideration of a lease which may be terminated by the city at any time after five years upon payment of the value of the equipment plus 10 per cent. The proposed lease provides for the payment, first, of operating expenses; next, for the payment of fares and bridge rentals; third, for the creation of a fund to cover depreciation and obsolescence; fourth, for the payment to the company of an amount equal to 6 per cent on its cash investment; fifth, for the payment to the city of an amount equal to the annual interest and amortization charge on the city bonds issued for construction of the Centre Street subway loop, of stations and bridge communications, and, lastly, for a division of earnings over and above these payments between the city and the railroad company.

William G. McAdoo, president of the Hudson & Manhattan Railroad, on Dec. 15, 1910, withdrew from the Public Service Commission his offer to build a modified form of the tri-borough subway system and to operate it in connection with the underground system of the company in Manhattan, New Jersey and beneath the North River. Mr. McAdoo says, in justifying his withdrawal, that when he made the offer to spend $50,000,000 of private capital under the plan he proposed he understood the policy of the commission and the city was to have a system which would be entirely independent of that of the Interborough Rapid Transit Company.

Railway Affairs in Detroit

At a meeting of the Common Council of Detroit, Mich., on the evening of Dec. 13, 1910, the ordinance to prohibit passengers from riding in the front vestibules of the street cars was defeated. The opponents of the measure argued that the ordinance would cause many men to be late at business and might result in some of them losing their places. The ordinance was intended to prevent passengers from absorbing the attention of the motormen. The committee on ordinances recommended the passage of the measure as an experiment. The committee also suggested that the so-called Codd service ordinance should be revised so as to compel the Detroit United Railway to make changes in its service which it was thought would improve operating conditions. Assistant Corporation Counsel Penniman charges that the company is disobeying the ordinance which governs the heating and ventilating of cars.

The committee on franchises of the City Council, on Dec. 17, 1910, approved the suggestion of Mayor Breitmeyer that steps should be taken to reopen negotiations with the Detroit United Railway for a settlement of the franchise question and that a new appraisal of the property should be made. It was expected that this committee would report to the Common Council during the week ended Dec. 24, 1910. Some months ago J. C. Hutchins, president of the company, proposed to pay for another appraisal if the Aldermen would agree to include in the final settlement the cost of the appraisal made by Bion J. Arnold as one of the capital items in the total valuation of the company's property. It is said that the Aldermen now favor holding Mr. Hutchins to a subsequent proposition, in which the company was committed to bear the expense of all appraisements that have been made in the past, the cost of the new work to be figured in the settlement as an item of overhead charge. In the proposed settlement, it seems, the Aldermen intend that the city shall have entire charge of the appraisal.

Mr. Hutchins has assured Mayor Breitmeyer that the company is willing to stand a reasonable expense for a new appraisal of the property if the Aldermen are in earnest in their desire to reach a settlement. He said further that the company would welcome a settlement fair to both the company and the city, as it would like to make the extensions and improvements which the natural increase in traffic demands.

In speaking of the matter Chairman Harpfer, of the committee on ordinances, said:

"The company says it is willing to settle on a fair basis and even give the city the best of the bargain for the sake of peace. The city needs the extensions and improvements so badly that it simply must have them soon or the growth of the community will be retarded immeasurably. We have been fighting in the courts for years and have got nowhere, and there is no prospect of an adjustment for years to come by that method.

"Realizing all these things, I think the Aldermen are in a frame of mind to go ahead and try to make a settlement of their own. If they do they will get the credit. If they fail they will do no worse than numbers of others have done before. For myself, I think that everything is ripe for a speedy adjustment of the whole matter on a basis that will appeal to the common sense of the thinking men of the community."

Strike in Winnipeg

The motormen and conductors in the employ of the Winnipeg (Man.) Electric Railway decided on Dec. 16, 1910, to go on strike at 6 a. m. that day. The decision to strike was arrived at during a meeting of the men early on the morning of Dec. 16, 1910, at which it was arranged to discuss the terms of the report of the board of arbitration which had considered the differences between the company and the employees and also the report of the committee which met the officials of the company on Dec. 15, 1910.

The differences between the company and its employees date back to last spring when the company discharged four of the employees for violating a rule which forbids men to enter a saloon while in uniform. Two of the men discharged were officials of a union which had been organized among the employees, and the men construed the discharges as discrimination against the union men. They took the matter up with the company, but were unable to settle the differences. Arbitration was then resorted to and a board consisting of Mayor L. L. Pelletier, of Fort William, representing the men; William Robinson, representing the company, and J. J. Christie, appointed by the Dominion government as chairman, went over the question carefully and two reports were presented. The majority report signed by Mr. Robinson and Mr. Christie sustained the company, while the report signed by Mayor Pelletier sustained the men. Messrs. Robinson and Christie in concluding their report said:

"The evidence went to show that every man employed as motorman or conductor receipted for a book of rules and regulations and that there was no complaint that they had any objections to same. There were about 23 motormen and conductors discharged for drinking intoxicating liquor between July 1, 1910, and Oct. 1, 1910, and there were no complaints as to wrongful dismissal. On Oct. 12, 1910, three motormen and one conductor were dismissed, to which exception was taken, and which is the case in dispute. From evidence taken and admissions of the four men dismissed, we are satisfied that they entered barrooms where intoxicating liquors were sold and drank same while wearing the company's uniform, which is prohibited by the company's rules.

"We find that the company was justified in dismissing these four men, and we also find that there was nothing produced in the evidence to substantiate the charge that the company had discriminated against any of the men. The manager of the company states that no motorman or conductor was ever dismissed from the company's service who was seen going into a hotel barroom after his day's work was finished.

"Your board has seriously considered the matter of asking the company to reinstate the dismissed motormen and conductor, but as the company is financially responsible to the public for damages in case of injuries or loss of life, we believe the matter should be left to the company to decide on the merits of each individual case, as it has in the past disposed of similar cases.

"The most recent rules that govern the use of intoxicating liquors are cited from a report of a board of conciliation and investigation in a dispute between the Toronto Railway and its employees, dated Aug. 20, 1910, which report states that

for serious cases, including drunkenness, drinking in uniform or drinking on cars, employees may be suspended or dismissed at the discretion of the proper officials. These rules were accepted by both the company and its employees."

The company manned as many cars as possible on Dec. 16, 1910, and gave a partial service until 7 p. m., when operations were discontinued so as to avoid disorder which threatened to break with nightfall. On Dec. 17, 1910, the company succeeded in manning 80 cars and announced that the old men would be given until Dec. 20, 1910, to return to work.

Cleveland Traction Situation

The directors of the Cleveland (Ohio) Railway did not consider plans for financing improvements at their meeting on Dec. 17, 1910, as Horace Andrews, formerly president of the company, could not be present. It was expected that Mr. Andrews would give the directors information on the attitude of New York financiers toward a bond issue. It is likely that Mr. Andrews will be present at the meeting of the directors on Dec. 24, 1910, when the matter will probably be taken up. It is said that the bond houses will send representatives to Cleveland to investigate conditions relative to the purchase of bonds.

The statement of operation of the company for November was presented at the meeting on Dec. 17. It shows an actual deficit of $1,958.41. There would have been a surplus of $9,306.89, however, had it been possible to keep the expenses within the limit defined by the Tayler grant, under which the company is allowed 5 cents per car mile for maintenance and 11½ cents per car mile for operating expenses for November. The report shows 2,126,145 car miles operated, so that the allowance under the grant for maintenance was $106,307.25, and for operating expenses $244,506.68. The actual maintenance expenditures were $96,113.01, while the amount expended in operation was $265,966.22. The statement of earnings for November follows:

Receipts		$506,288.92
Maintenance	$96,113.01	
Operating expenses	265,966.22	
Taxes	31,559 85	
Interest	114,608.25	
		508,247.33
Deficit		$1,958.41

A summary of the operation for nine months under the Tayler grant shows that the amount expended by the company for maintenance and the upkeep of the property was $191,068 in excess of the allowance under the ordinance, and the actual expense of operation has been $12,268 more than the amount allowed under the terms of the grant.

A. B. DuPont, former president of the Municipal Traction Company, Cleveland, Ohio, read a paper before the Engineers' Club of Cleveland on the evening of Dec. 13, 1910, on "The Transportation Problem of Greater Cleveland," in which he dwelt upon the need of subways or other means of rapid transit in Cleveland. Mr. DuPont said that Cleveland differed from other cities on account of the waste land which compels people to reside far from the business center. He also discussed his new car for use in subways.

Toledo Traction Situation

Brand Whitlock, Mayor of Toledo, Ohio, on Dec. 15, 1910, submitted to the City Council for consideration a letter, containing a proposition to the Toledo Railways & Light Company to proceed at once with negotiations toward a settlement of the franchise question. The letter was approved by unanimous vote of the Council, and on the following morning it was delivered by messenger to Albion E. Lang, president of the company.

Mayor Whitlock outlined a process for reaching important conclusions, such as the valuation of the property and fixing the fare. So far as can be judged from the expressions of the Mayor he appears to expect to follow the plan used in Cleveland.

Mayor Whitlock says that every feature of a new grant must be fair to the company as well as the city, and that any settlement reached must insure a return that will yield a fair interest on the money invested. Respecting the matter of control of operation, he suggests that this must not be such as will impair the value of the property or prevent its earning a just rate of return in addition to the cost of service rendered.

While the approval of the Council was unanimous, some of the members questioned the advisability of outlining the course the city expects to pursue at this time, while others felt that the letter might possibly be binding upon the city under the action taken. Mayor Whitlock explained, however, that it contains only suggestions, and that the proposition may not be accepted by the company, which may, if it so desires, present a plan that could be adopted by the administration instead of this one, if it should be found better. City Solicitor Cornell Schricber said he felt that a brief note asking the company to take up negotiations would answer the purpose better, as the city might be compelled to yield some of its points, which would prove rather embarrassing. He stated, though, that there was no legal objection to the letter and expressed the opinion that action looking toward the settlement of the franchise question should be taken at once.

In the negotiation Mayor Whitlock will represent the city and the company is requested to appoint a man to act in similar capacity. The meetings will be held in the council chamber, so that people will have an opportunity to be present. The desire of the administration is that the fullest publicity be given to everything done in connection with the proposed new grant.

Meeting of New England Street Railway Club.—The regular monthly meeting of the New England Street Railway Club was arranged to be held at the American House, Boston, Mass., on Thursday evening, Dec. 22, 1910. At 8 p. m. the regular business session was to be held. Thomas N. McCarter, president of the Public Service Railway, Newark, N. J., was to address the meeting. Brief addresses by prominent street railway officials in New England were also arranged.

Disastrous Explosion at New Grand Central Station.—More than 10 persons were killed and scores of others were injured in an explosion which occurred on Dec. 19, 1910, on the site of the new terminal of the New York Central & Hudson River Railroad, at Fiftieth Street and Lexington avenue. Houses for blocks around were damaged by the force of the explosion, and a trolley car which was passing was wrecked, several passengers being killed. The company, through C. F. Daly, vice-president, issued the following statement the day on which the accident occurred: "Careful investigation made by Chief Engineer Kittredge, Construction Engineer Harwood, Electrical Engineer Katte and Manager Whaley, of the Grand Central Terminal, indicates that the explosion was the result of an electric train falling over a bumping post in the storage yard and breaking a gas pipe, the escape from which penetrated the lower part of the substation and became ignited from some cause unknown.

Improvements in Montreal.—A. E. Robert, president of the Montreal (Que.) Street Railway, at a conference with the special committee of the City Council of Montreal on Dec. 8, 1910, declared that the company could not consider many of the demands of the city in regard to extensions and improvements to the street railway system which were contained in the memorandum presented to the company until a new agreement has been entered into between the company and the city. According to Mr. Robert, the views of the committee embody changes which would involve an outlay of more than $3,000,000. Mr. Robert is reported to have said: "The congestion in the central parts of the city is the most important point to be considered and the betterment of the main line is more urgent than making outside extensions. The company cannot comply with the views of the city unless the proposed improvements are based on a new agreement between the city and the company. All the extensions outside of the city which have been referred to might be live issues within five years. They certainly are not imperative now. The company and the city ought to consider all the routes suggested and determine how far conditions in the more important districts could be improved. The company is willing to go as far as it can toward meeting the wishes of the city under the terms of the present franchise, but the needs of the city as outlined in the memorandum presented to the company must be based on a new contract."

Financial and Corporate

New York Stock and Money Market

Dec. 20, 1910.

At one time this morning the active stocks on the list attained the highest prices touched by them since the post-election decline. In the afternoon prices declined again and the close was little better than that of the day previous. The market, however, showed no improvement in activity. For the week it was exceptionally dull and almost entirely professional. Even the regular traders were reticent.

Money continues to be easy and the rates of exchange point to gold imports. Quotations to-day were: Call, 2½@3½ per cent; 90 days, 4 per cent.

Other Markets

While there has been a little dealing in traction shares on the Philadelphia market every day during the week, there has been no activity. The entrance of E. T. Stotesbury into the management of Philadelphia Rapid Transit has given confidence to those interested in the transit situation, but has resulted in little change in prices.

In Chicago there continues to be considerable activity in Railways certificates, all of the series figuring in the trading. As a rule prices have been advancing. Series 1 sold to-day at 92 and Series 2 sold yesterday at 26⅝. Kansas City has also been fairly active.

During the past week tractions have cut little figure in the Boston market. Both issues of Massachusetts Electric and odd lots of Boston Elevated have covered the trading. Prices have remained unchanged.

In the Baltimore market the bonds of the United Railways are still active, at former figures, and there has also been limited dealing in the stock at about 15½.

Quotations of traction and manufacturing securities as compared with last week follow:

	Dec. 13.	Dec. 20.
American Railways Company	a43¾	a42½
Aurora, Elgin & Chicago Railroad (common)	a45	a45
Aurora, Elgin & Chicago Railroad (preferred)	a86	83½
Boston Elevated Railway	a127½	a127½
Boston Suburban Electric Companies (common)	a16	a16
Boston Suburban Electric Companies (preferred)	a72	a72
Boston & Worcester Electric Companies (common)	a10	a10
Boston & Worcester Electric Companies (preferred)	a39	a39½
Brooklyn Rapid Transit	73¾	76¼
Brooklyn Rapid Transit Company, 1st ref. conv. 4s	82⅛	83
Capital Traction Company, Washington	128	a129
Chicago City Railway	a180	165
Chicago & Oak Park Elevated Railroad (common)	*3¼	*3¼
Chicago & Oak Park Elevated Railroad (preferred)	*7¼	*7¼
Chicago Railways, ptcptg., ctf. 1	a91	a92½
Chicago Railways, ptcptg., ctf. 2	a23½	a25¾
Chicago Railways, ptcptg., ctf. 3	a10½	a11
Chicago Railways, ptcptg., ctf. 4	a6½	a6½
Cleveland Railway	*91½	*91½
Consolidated Traction of New Jersey	a72	a72
Consolidated Traction of N. J., 5 per cent bonds	a104	a104
Detroit United Railway	a59¾	68
General Electric Company	a153	a156
Georgia Railway & Electric Company (common)	a118	a118
Georgia Railway & Electric Company (preferred)	a88	a87
Interborough-Metropolitan Company (common)	19	20½
Interborough-Metropolitan Company (preferred)	53⅛	55⅝
Interborough-Metropolitan Company (4½s)	79⅜	80
Kansas City Railway & Light Company (common)	a22½	a23
Kansas City Railway & Light Company (preferred)	73½	a73½
Manhattan Railway	138	138
Massachusetts Electric Company (common)	a18½	a18½
Massachusetts Electric Companies (preferred)	a84¼	a85½
Metropolitan West Side, Chicago (common)	20¼	*20¼
Metropolitan West Side, Chicago (preferred)	68	*68
Metropolitan Street Railway, New York	*19½	*19½
Milwaukee Electric Railway & Light (preferred)	*110	*110
North American Company	62	*62
Northwestern Elevated Railroad (common)	a20	a20
Northwestern Elevated Railroad (preferred)	a60	a60
Philadelphia Company, Pittsburg (common)	a43¾	47
Philadelphia Company, Pittsburg (preferred)	a42½	a42½
Philadelphia Rapid Transit Company	a18⅛	a18¼
Philadelphia Traction Company	a83	a83⅜
Public Service Corporation, 5 per cent col. notes	a95	a95½
Public Service Corporation, ctfs.	a101	a100
Seattle Electric Company (common)	a108	a108
Seattle Electric Company (preferred)	102	102
South Side Elevated Railroad (Chicago)	a68½	a69½
Third Avenue Railroad, New York	9⅝	10¼
Toledo Railways & Light Company	a8	a8
Twin City Rapid Transit, Minneapolis (common)	107½	108½
Union Traction Company, Philadelphia	a42¾	a42⅝
United Rys. & Electric Company, Baltimore	*14½	*14½
United Rys. Inv. Co. (common)	a15	a15
United Rys. Inv. Co. (preferred)	*52	*52
Washington Ry. & Electric Company (common)	a33⅛	33½
Washington Ry. & Electric Company (preferred)	a87½	86¼
West End Street Railway, Boston (common)	a89½	a90½
West End Street Railway, Boston (preferred)	a103	a102¾
Westinghouse Elec. & Mfg. Co.	66	68
Westinghouse Elec. & Mfg. Company (1st pref.)	*124	*124

aAsked. *Last sale.

Annual Report of Massachusetts Electric Companies

The total income of the Massachusetts Electric Companies, Boston, Mass., for the year ended Sept. 30, 1910, was $1,212,859, of which $1,040,029 was received as dividends on stocks owned and $172,830 was interest on notes and bank balances. Total expenses were $24,643, divided as follows: Salaries of general officers and executive committee, $13,917; printing and stationery, $1,181; legal and miscellaneous expenses, $8,845; federal income tax, $700. The net income for the year was $1,188,216. Against this sum there was charged $181,537 interest due on coupon notes, leaving net divisible income of $1,006,679. Total dividends of 3¾ per cent required $770,903, leaving a surplus for the year of $235,776. The surplus as of Sept. 30, 1909, was $2,898,758, making a total of $3,134,534. Against this sum there were charged $5,821 premium on coupon notes purchased and $166,500 discount on coupon notes sold, less $53,712 profit on sale of stocks, a net deduction of $118,609. The final surplus as of Sept. 30, 1910, was $3,015,925.

A consolidated statement of the returns for the operating street railway and electric light companies for two years follows:

Year ended Sept. 30:	1910.	1909.
Earnings	$8,560,949	$8,052,355
Expenses	5,360,295	5,148,396
Net earnings	$3,200,654	$2,903,959
Interest, rentals and taxes	1,792,937	1,778,129
Net divisible income	$1,407,717	$1,125,830
Dividends on common stock	1,035,017	957,895
Dividends on preferred stock	95,544	42,569
Totals	$1,130,561	$1,000,464
Surplus for the year	$277,156	$125,366
Surplus Sept. 30, 1909	216,398	.....
Surplus Sept. 30, 1908	.....	210,887
Totals	$493,554	$336,253
Deductions:		
Injuries and damages prior to insurance	.....	$8,271
Premium on bonds redeemed	$1,049	2,188
Adjustment of accounts	3,153	5,561
Reconstruction	178,001	74,388
Reconstruction of leased properties	.....	25,444
Replacement	82,991	.....
Depreciation of Hyde Park Electric Light Company property	7,000	4,003
Total deductions	$272,194	$119,855
Surplus Sept. 30, 1910	$221,360	.....
Surplus Sept. 30, 1909	.....	$216,398

Gordon Abbott, the president, says in his statement to shareholders:

"Your trustees have the pleasure of reporting to you the results of a year which has been on the whole uniformly prosperous. The gross earnings of the companies in which you are interested showed a substantial increase for the first nine months of the period under consideration, and while those of the last three months were less satisfactory, this was only in comparison with the results of a very favorable summer a year ago.

"The year shows an increase in gross of $508,593, or 6.32 per cent over the previous year, with a resulting increase in net of $281,887. Of this $52,974 was absorbed in dividends on the increased issue of preferred shares of the operating companies, leaving an increase in net divisible income applicable to the common shares of those companies of $228,913. This showing enabled the directors of the Old Colony Street Railway to raise the rate of dividend from 5 per cent to 6 per cent, the rate on the Boston & Northern Street Railway remaining the same as before, 5 per cent.

"During the year the Boston & Northern Street Railway sold 5883 shares of preferred stock, and the Old Colony Street Railway 4041 shares, a total of 9924 shares, which netted the companies $1,141,260. No bonds were sold by either of the companies during the year, but they have at the present time authority to issue an aggregate of $1,609,000 bonds, and these will be sold as the market offers a favorable opportunity. Many of these bonds have come into the treasury of the operating companies in exchange for bonds of the old underlying companies which matured during the past year. These bonds upon maturity were paid for from cash in the treasury, and under the operation of the refunding mortgages new bonds were issued in their place. To the payments for this account is due the creation of the small floating debt of $500,000 which appears in the consolidated balance sheet as due to others than the Massachusetts Electric Companies.

"It is expected that early in the year 1911 the operating companies will obtain the right to issue further bonds on account of capital expenditures during the past year.

"During the past year the sum of $1,610,691 has been expended upon the properties, divided as follows: Track construction, $186,726; track reconstruction, $538,083; cars and electric equipment, $382,240; overhead lines and feeders, $136,208; power stations, $146,288; land and buildings, $154,770; sundry equipment, $9,294; changes in Hyde Park power station, $57,082. Total, $1,610,691.

"During the year 8.1 miles of new track have been constructed and 29½ miles of track reconstructed. Work on 4.3 miles of new track construction and 14.6 miles of track reconstruction was in progress at the close of the year and will be finished before Jan. 1, 1911.

"In addition to the money spent for construction and reconstruction, the cost of maintenance charged to operation reached a higher figure this year, both in actual expenditure and in percentage of gross earnings, than ever before in the history of the properties. As a result your trustees are able again to report that the physical condition of the property is considerably improved.

"The last Legislature passed an act enabling street railway companies to issue bonds sufficient to provide cash to equal the discount on bonds previously sold, in order that the amounts of money provided by issue of stocks and bonds should be substantially equal, thus fulfilling the spirit of previous legislation. Under this act authority was given after the expiration of the last fiscal year for the issue of an aggregate of $517,000 bonds of the Boston & Northern and Old Colony Companies. The Railroad Commission in its decision authorizing this issue stipulated that annual sinking fund payments should be made by each company in amounts which, with interest thereon, will extinguish the bonds issued for discount before the maturity of the respective issues. For this reason no portion of the discount on bonds appearing in the balance sheet has been charged off during the past year, nor will any such charges be made in future, the payments on sinking fund account taking their place.

"The agreement between the operating companies and their conductors and motormen having expired Oct. 1, a new one took its place, running for four years, and containing provisions for an increase in wages of between 5 and 6 per cent. The result will be a considerable increase in cost of operation.

"Dividends at the full rate of 4 per cent on the preferred shares having been resumed, inquiries have naturally been made as to the payment or funding of the accrued and unpaid dividends on those shares, and several plans have been put forward to accomplish this result. To carry out any of these it is obvious that an income is required which will suffice not only to pay the 4 per cent dividend on the existing preferred shares, but also to pay dividends on any securities issued for the purpose of funding the accrued dividends, which now amount to $3,648,938. Your trustees are of opinion that it would not be wise to adopt and attempt to carry out any funding plan until experience has shown that such an income is better assured than at present. They believe that the interests of the shareholders will best be served by postponing any attempt at funding the accrued dividends until sufficient time has elapsed to establish still further the earning power of the operating companies."

Refinancing Philadelphia Rapid Transit Company

On Dec. 14, 1910, E. T. Stotesbury, of Drexel & Company, Philadelphia, wrote to Charles O. Kruger, president of the Philadelphia Rapid Transit Company, acknowledging Mr. Kruger's letter of Dec. 8, 1910, which contained the proposed plan for carrying out the general suggestions embodied by Mr. Stotesbury in a letter dated Oct. 20, 1910. In his letter of Dec. 14, 1910, Mr. Stotesbury said:

"The proposed issue of $10,000,000 guaranteed principal and interest by the Union Traction Company, and secured by the equity in the Market Street Elevated road, as set forth in your letter, seems to meet fairly the company's known requirements in the matter of new capital and the refunding of accruing capital obligations during the five-year period next ensuing.

"With reference to your statement that the Philadelphia Rapid Transit Company's treasury now contains an excess from $1,500,000 to $2,000,000 in current assets over current liabilities, it would appear that this sum should be sufficient to make possible the expenditure of the full amount required for maintenance and renewals during rehabilitation.

"Conforming to the suggestion contained in your letter, but having in view the double purpose of securing the substantial accuracy of your estimate, and also that the exact condition of the company's affairs be made a matter of record prior to the proposed change in management, it would seem best that there be now made a complete audit of the company's books, as of Dec. 31. With this audit before us the final details of the plan can be worked out with the Union Traction Company's directors in ample time to present them at the stockholders' meetings.

"I desire to have my position in regard to this matter clearly understood, both by yourself and the public generally. I shall undertake it solely from a desire to promote the best interests of Philadelphia and those fellow-citizens whose confidence in my ability to solve this problem I appreciate and hope to deserve; but as I accept a heavy responsibility without remuneration, and at a sacrifice of time which I can ill afford to make, I must be allowed to use my own judgment to spend such moneys as are necessary to secure the most expert advice and assistance obtainable."

Meetings of the stockholders of the Philadelphia Rapid Transit Company and the Union Traction Company have been called for Feb. 28, 1911, to approve the plan for refinancing the Philadelphia Rapid Transit Company proposed by Mr. Stotesbury. The directors of both companies met on Dec. 19, 1910, and expressed satisfaction at Mr. Stotesbury's letter of Dec. 16, 1910.

Albany Southern Railroad, Hudson, N. Y.—The Albany Southern Railroad has petitioned the Public Service Commission of the Second District of New York for permission to issue $52,000 principal of its first mortgage bonds of the denomination of $1,000 each. On Sept. 15, 1910, the commission authorized the company to issue $1,250,000 in first mortgage 5 per cent sinking fund gold bonds at a price not less than 85, to provide funds to construct a second track from Rensselaer to Kinderhook Lake and to straighten and improve its railroad between these two points. The new issue is needed in addition to the bonds already authorized and sold to pay for work under way and to be completed on or before Dec. 31, 1910.

American Cities Railway & Light Company, New York, N. Y.—The American Cities Railway & Light Company has declared a semi-annual dividend of 2 per cent and an extra dividend of ¼ of 1 per cent on the $10,761,165 of common stock of the company, payable on Jan. 2, 1911, to holders of record on Dec. 20, 1910. This compares with 1¾ per cent paid in July, 1910, 1½ per cent in January, 1910, and 1 per cent in July, 1909. The regular quarterly dividend of 1½ per cent on the preferred stock was also declared, payable on Jan. 2, 1911.

Chicago (Ill.) City Railway.—The directors of the Chicago City Railway have declared the regular quarterly dividend of 2½ per cent on the $18,000,000 of stock of the company and an extra dividend of 2 per cent out of the surplus, both payable on Dec. 30, 1910, to holders of record on Dec. 16, 1910.

Chicago (Ill.) Consolidated Traction Company.—Judge Cutting in the Probate Court at Chicago, Ill., on Dec. 16, 1910, authorized Louis S. Owsler, executor of the Charles T. Yerkes estate, to transfer the underlying bonds of the Chicago Consolidated Traction Company held by the estate to the Chicago Railways in exchange for new securities, under the terms of the agreement dated Nov. 1, 1910, between Andrew Cooke and the Harris Trust & Savings Bank, Chicago, Ill., as depositary.

Chicago City & Connecting Railways, Chicago, Ill.—The Calumet & South Chicago Railway has certified to an increase in its capital stock from $5,000,000 to $10,000,000 and the Southern Street Railway has certified to an increase in its capital stock from $800,000 to $2,400,000. Both of these companies are constituent companies of the Chicago City & Connecting Railways.

Columbus, Marion & Bucyrus Railway, Delaware, Ohio.—Judge Babst has approved the report of George Whysall

and F. E. Guthery, receivers of the Columbus, Marion & Bucyrus Railway, which shows that nearly $44,000 has been expended during the year, and the court has ordered the receivers to hold one motor car and five dump cars in their possession until their ownership can be established.

Coney Island & Brooklyn Railroad, Brooklyn, N. Y.—The Coney Island & Brooklyn Railroad has applied to the Public Service Commission of the First District of New York for permission to issue $500,000 of 6 per cent three-year notes, redeemable at 101. The holders are to have the option of taking in exchange bonds which are to be issued to secure them to the amount of $625,000 at 85.

Frederick (Md.) Railway.—The Public Service Commission of Maryland has taken under consideration the protest of certain stockholders of the Frederick Railway against the application of the company to the commission for permission to issue an additional $40,000 of preferred stock to pay for a majority of the shares of the stock of the Frederick Gas & Electric Company.

Northern Illinois Light & Traction Company, Ottawa, Ill.—New officers have recently been elected for the Northern Illinois Light & Traction Company as follows: W. B. McKinley, president; H. E. Chubbuck, vice-president and general manager; E. A. Moenutt, secretary; Edward Woodman, treasurer; W. J. Achelpohl, auditor; L. W. Hess, superintendent.

Syracuse (N. Y.) Rapid Transit Railway.—The Syracuse Rapid Transit Railway has applied to the Public Service Commission of the Second District of New York for approval of an increase of capital stock from $4,000,000 to $5,750,000. The increase is to be preferred stock. The company asks for an issue at this time of $1,660,000 to cover outstanding notes, $1,585,000 of which are owned by the New York State Railways, which has applied to the commission for permission to acquire the new preferred stock. W. H. Newman, formerly president of the New York Central & Hudson River Railroad, has been elected a director of the Syracuse Rapid Transit Railway to succeed the late E. V. W. Rossiter.

Washington, Baltimore & Annapolis Electric Railway, Washington, D. C.—Circulars have been mailed to the holders of the second mortgage bonds of the Washington, Baltimore & Annapolis Electric Railway announcing that the time for filing subscriptions under the reorganization plans has been extended to Dec. 31, 1910, and that the time for making the first payment has been extended to Jan. 16, 1911.

Dividends Declared

Bangor Railway & Electric Company, Bangor, Maine, quarterly, 1¾ per cent.

Capital Traction Company, Washington, D. C., quarterly, 1½ per cent.

Cincinnati (Ohio) Street Railway, quarterly, 1½ per cent.

Columbus (Ga.) Electric Company, 3 per cent, preferred.

Germantown Passenger Railway, Philadelphia, Pa., quarterly, $1.31¼.

Halifax (N. S.) Electric Tramway, Ltd., quarterly, 1¾ per cent.

Hestonville, Mantau & Fairmount Passenger Railway, $1.50 preferred; $1 common.

Lake Shore Electric Railway, Cleveland, Ohio, quarterly, 1½ per cent, first preferred.

Manila Electric Railroad & Lighting Corporation, Manila, P. I., quarterly, 1 per cent.

Norfolk & Portsmouth Traction Company, Norfolk, Va., 1¼ per cent, preferred.

Northwestern Elevated Railroad, Chicago, Ill., quarterly, 1 per cent, preferred.

Omaha & Council Bluffs Street Railway, Omaha, Neb., quarterly, 1¼ per cent, preferred; quarterly, 1 per cent, common.

Philadelphia Company, Pittsburgh, Pa., quarterly, 1½ per cent, common.

Reading (Pa.) Traction Company, $0.75.

Union Passenger Railway, Philadelphia, Pa., $4.75.

Virginia Railway & Power Company, Richmond, Va., 2½ per cent, preferred.

West Philadelphia Passenger Railway, Philadelphia, Pa., $5.

Traffic and Transportation

Service on the Surface Lines in New York

Oren Root, general manager for the receivers of the Metropolitan Street Railway, New York, N. Y., on Dec. 18, 1910, addressed a letter to the New York *Times*, in which he made the following statements in reply to an editorial which had appeared a few days previously in the *Times* commenting on the service furnished by the surface lines in Manhattan Borough:

"Obviously, it is not reasonable to set up an artificial standard of perfection and compare the actual accomplishment with the theoretical standard when the latter is unattainable, but it seems to me that the surface car situation can be properly approached from the standpoint of a comparison between the conditions existing at the time of the appointment of Mr. Joline and Mr. Robinson as receivers of the Metropolitan Street Railway and the conditions existing now.

"During October and November, 1910, the total number of cars upon which defects developed during operation was equal to only about one-fifth of the number of defective cars removed from service during October and November, 1907. These figures are indicative of the improved efficiency of the equipment, and the comparison of these two months is typical of the progress made in the operating department.

"In cases where the delay is not caused by the traffic congestion the irregularities are traceable to other causes which no amount of foresight or precaution on the part of those operating an electric railway can control. In other words, no amount of additional service would materially improve the situation when the number of cars on the line is sufficient to afford seats for passengers, but when such cars are prevented from passing over the road in accordance with the schedule because of the outside interference with their operation. Adequacy of service is measured by the number of cars operated past a given point in a given time, and not by the number of cars actually in service on a line.

"We know, and our records will substantiate, that since the beginning of the receivership in September, 1907, there has been a marked improvement in the regulation of the service on the lines of the Metropolitan Street Railway, but I cannot too strongly emphasize the fact that those in charge of the management of the Metropolitan Street Railway today welcome any suggestions which may be offered, and are glad to receive criticisms. It is our policy to give every suggestion and criticism careful consideration, and by their receipt our operating staff is stimulated. It is but fair to say that many valuable ideas of practical utility in the operation of these lines have emanated from sources outside of the officials of the road. It is our desire to merit the good will of the public and we are glad at any time to throw open our system to investigation or to explain our method of operation."

Decision in Regard to Fares on Boston & Northern Street Railway

The Railroad Commission of Massachusetts has handed down the following decision in regard to fares on the Boston & Northern Street Railway and the methods of operation of that company:

"The petition asks that transfers should be given on the Park Avenue line of the Boston & Northern Street Railway in Revere entitling passengers thereon to transportation to Lynn for a single 5-cent fare; that the Park Avenue line be extended to Washington Avenue in said town and that the company be prohibited from allowing cars not in use to remain upon its tracks located in Ocean Avenue in Revere or from so using said tracks as to interfere with and impede public travel from said avenue.

"After notice and hearing and further consideration the board finds the Park Avenue line to be one of several side lines in Revere, among them being the line to Revere Beach, and that the request for transfers must be considered with reference to its general application. Should the people of Revere be given through transfers the right to travel from all lines to Lynn the people of Lynn would naturally demand transfers from all lines to Revere Beach. A recom-

mendation that passengers should be carried between all parts of Lynn and Revere Beach for a single 5-cent fare would be unreasonable. At the hearing, however, it was shown that during certain early morning and late afternoon hours so large a number of regular patrons have occasion to travel between Park Avenue and West Lynn as to be entitled to special consideration. The board, therefore, recommends that the company meet this situation by some form of ticket at a reduced rate.

"The board does not find in the conditions existing as to the development of the immediate territory nor the prospect of possible revenue from contiguous territory—especially when considered with reference to the general conditions and needs in other sections served by this railway—justification for a recommendation that the Park Avenue line be at this time extended to Washington Avenue.

"It appears that the proposed new car station in Revere and certain other plans being considered will afford quite a measure of relief from the inconvenience caused by cars standing upon the company's tracks in Ocean Avenue, and, therefore, the board makes no recommendation, but will consider the matter further upon application should it be found that the proposed changes do not give the desired relief."

Suburban Electric Railway Magazine.—The Christmas issue of this magazine includes 52 pages and is the fifth number of Vol. I. It contains a number of interesting popular stories and sketches, as well as the timetables of several steam and electric railways in Central New York.

Service Under Hudson River Interrupted.—Service was suspended by the Hudson & Manhattan Railroad on its lines under the Hudson River between New York and New Jersey for three hours on the morning of Dec. 19, 1910, on account of a slight accident at the power station of the company in Jersey City.

Fares on Suburban Lines at Birmingham.—A resolution has been introduced in the City Council of Birmingham, Ala., which instructs the city attorney to inquire into the franchise rights of the Birmingham Railway, Light & Power Company to determine the authority of the company to charge a fare of 10 cents to Pratt City and Ensley.

Steubenville and Wheeling Connected.—The tracks of the Tri-State Traction Company, which operates between Steubenville and Wellsburg, W. Va., and the Panhandle Traction Company, which operates between Wellsburg and Wheeling, have been connected at Wellsburg and it is possible now to operate cars from Beaver to Wheeling without change.

Protest Against Fares in Schenectady.—Mayor Duryee, of Schenectady, has filed a protest with the Public Service Commission of the Second District of New York against the fare charged by the Schenectady Railway within the city limits. Since March 1, 1909, the company has charged a straight 5-cent fare within the city limits. The Mayor seeks to have the commission enter an order to require the company to restore the sale of tickets at the rate of six for 25 cents.

New Transfer System Proposed in Louisville.—A new transfer system, whereby patrons of the Louisville (Ky.) Railway may be transferred to suburban cars from cars operating on the lines in the city, is being considered by the directors and officials of the company. Heretofore passengers on cars in the city, in order to reach a point on any of the suburban lines, have been compelled to transfer twice and often three times. Under the present system a transfer from one of the city cars to another city car, good to the city limits, is issued.

Fare Protest in Maryland.—Residents along the Emory Grove line of the United Railways & Electric Company, Baltimore, Md., have protested to the Public Service Commission of Maryland against the action of the company in suspending at once all commutation fares on that and all other lines, and especially in abolishing the 7½-cent rate to nearby suburban points. The commission is asked to order the company to return to the tariff schedules filed with the commission on Sept. 16, 1910. The petition charges that the company acted hastily in abolishing all commutation rates, following a protest from residents of Ellicott City, with regard to alleged discrimination in favor of residents along the Catonville-Irvington line.

New Wage Scale of Indianapolis & Cincinnati Traction Company.—On Jan. 1, 1911, the Indianapolis & Cincinnati Traction Company, Indianapolis, Ind., will adopt a new wage scale, which will provide a wage of 20 cents an hour for the first year, with an advance of 1 cent an hour each year to the eighth year. During the eighth and ninth years 27 cents an hour will be paid, and during the tenth year the rate of pay will be 28 cents an hour. Changes are to be made from one class to another on the first or the sixteenth of the month, which is the nearest to the anniversary of commencement of service. Commencement of service is to be taken to mean the date when a man is listed as a competent motorman or conductor, either with a regular run or prepared to take a regular run as soon as there is an opening.

Mayor Gaynor on Heat in Cars.—On Dec. 14, 1910, Mayor Gaynor of New York addressed the following letter to a resident of Brooklyn who had complained to him that the street cars were not heated sufficiently to keep him and others from freezing to death: "It is my opinion that the heat in the cars most of the time makes the air in them very disagreeable and unhealthy. So far as I am concerned I wish they were not heated at all. Your statement that at least 5,000 people die every year from cold in the street cars seems to be a great exaggeration. Suppose you stay out of the cars and walk back and forth for a month. I will warrant that at the end of that time you will not care much about heat in the cars, and that, moreover, you will not feel like finding fault with everybody and everything in the world."

Limited Service on Puget Sound Electric Railway.—On Dec. 5, 1910, a liberal limited service was inaugurated on the Puget Sound Electric Railway, Tacoma, Wash. For the last five years local trains have been run between Tacoma and Seattle hourly, with the exception of trains leaving Tacoma and Seattle at 9 a. m. and 4 p. m., which were limited and made no stops. In addition to these through trains the hourly local service was run between Renton and Seattle. About three years ago the company established a parlor car service on all trains, with a view to making an effort to get a share of the through travel between Tacoma and Seattle, which had been handled largely by the boats. In addition, to make a further effort to secure this through business, limited trains leaving Tacoma and Seattle hourly between 7:35 a. m. and 9 p. m. have been put on. These trains consist of one car, half of which is intended for parlor car passengers, with a smoking apartment for both classes of passengers. The scheduled time has been reduced 1 hour and 10 minutes. In addition to this limited service the hourly local trains are run, each local train connecting at Renton Junction with a train for Renton.

Public Service Railway Increases Wages.—The Public Service Railway, Newark, N. J., has announced an increase in the wages of motormen and conductors in the employ of the company, effective Jan. 1, 1911. At present the wage scale of the company for platform men is 21 cents per hour for the first year; 22 cents for the second year; 23 cents for the third year and to the tenth year, and 24 cents for those who have been in the company's employ more than ten years. Under the new schedule 22 cents an hour will be paid the first year; 23 cents the second year; 24 cents the third year to the tenth year, and 24½ cents for those who have been in the company's employ more than ten years. While this increases the rate paid for the first three mentioned classes one cent an hour, a very large percentage of the men are in the present first and second-year classes, so that these men will profit by the raise in wages and change in classification and receive an increase of two cents an hour over their present wages. For instance, the man who began work as a first year man in 1910 at 21 cents an hour becomes a second-year man in 1911 and will be paid 23 cents an hour. Notices of the increases will be posted in the car houses under orders of R. E. Danforth, general manager of the company, and N. W. Bolen, superintendent of transportation. In addition to raising the scale of wages the Public Service Railway has put into effect a minimum weekly wage of $10.50 for the benefit of men on the extra list.

Personal Mention

Mr. Edward **Carroll** has been appointed trainmaster of the Inter-Mountain Railroad, Denver, Col., to succeed Mr. F. N. Dawson.

Mr. Frank Allen has been appointed roadmaster of the People's Traction Company, Galesburg, Ill., to succeed Mr. M. Kounter.

Mr. J. F. Messmer has been appointed car accountant of the Peoria Railway Terminal Company, Peoria, Ill., effective on Jan. 1, 1911.

Mr. O. Roberts has been appointed commercial agent of the Iowa & Illinois Railway, Clinton, Ia., to succeed Mr. J. C. Feddersen.

Mr. C. A. Johnson has been elected secretary of the East Shore & Suburban Railway, Richmond, Cal, to succeed Mr. E. A. Gowe.

Mr. M. D. McKinna has been appointed master mechanic of the Bakersfield & Ventura Railroad, Oxnard, Cal., to succeed Mr. C. D. Brann.

Mr. William Butterworth has been elected president of the Humboldt Transit Company, Eureka, Cal., to succeed Mr. George Heazelton.

Mr. E. D. Spruill has been elected secretary of the Pueblo & Suburban Traction & Lighting Company, Pueblo, Col., to succeed Mr. H. C. Baker.

Mr. J. W. Speidel has been appointed general manager of the City & Elm Grove Railroad, Wheeling, W. Va., to succeed Mr. J. W. Smith, resigned.

Mr. Monroe G. Ogden has been elected secretary and treasurer of the Macon Railway & Light Company, Macon, Ga., to succeed J. H. Hertz, deceased.

Mr. D. A. Faut has been appointed superintendent of the Fruit Growers' Refrigerating & Power Company, which operates a 4½-mile electric railway in Anna, Ill.

Mr. James A. Wagoner, for the last four years storekeeper for the Aurora, Elgin & Chicago Railroad, Wheaton, Ill., has accepted a position with the Interstate Commerce Commission at Washington, D. C.

Mr. T. D. Massee has been appointed purchasing agent of the Macon Railway & Light Company, Macon, Ga., to succeed J. H. Hertz, deceased, who was secretary, treasurer and purchasing agent of the company.

Mr. George V. Thomas has resigned as general manager and purchasing agent of the New York & North Shore Traction Company, Roslyn, N. Y. Mr. Thomas' duties have been taken over by Mr. George A. Stanley, the president of the company.

Mr. T. A. Cashin has been appointed superintendent of the Fresno (Cal.) Traction Company to succeed Mr. J. F. Turner, who resigned from the company in August, 1910, to become superintendent of the Power, Transit & Light Company, Bakersfield, Cal.

Mr. Allen P. Norris, who has been connected with the operating department of the Washington, Baltimore & Annapolis Electric Railway, Washington, D. C., since the road was placed in operation, has been appointed freight and passenger agent of the company to succeed Mr. Charles F. Gladfelter, resigned.

Mr. J. W. Tompkins has resigned as superintendent of the interurban division of the Fort Wayne & Wabash Valley Traction Company, Fort Wayne, Ind., effective on Jan. 1, 1911, on which date the office of superintendent of the interurban division will be abolished. Mr. Tompkins will engage in private business.

Mr. J. J. Hooper has been appointed superintendent of the Stockton (Cal.) Electric Railroad to succeed Mr. Frank W. Webster, who heretofore has acted as general manager, superintendent and purchasing agent of the company. Mr. Webster will continue to act as general manager and purchasing agent of the company.

Mr. Frank C. Havens, treasurer of the Oakland (Cal.) Traction Company, has disposed of his interest in the company and in the San Francisco, Oakland & San José Railway to Mr. Frank M. Smith, his former associate, and will retire as an officer of the Oakland Traction Company to devote himself to his other interests.

Mr. C. E. Rose has been appointed superintendent of lighting of the Little Rock Railway & Electric Company, Little Rock, Ark., to succeed Mr. James E. Cowles, who, as noted in the Electric Railway Journal of Nov. 5, 1910, resigned from the company to become manager of the lighting department of the Shreveport Gas, Electric Light & Power Company, Shreveport, La.

Mr. Charles F. Gladfelter has resigned as secretary, treasurer and auditor of the Washington, Baltimore & Annapolis Electric Railway, Washington, D. C. Mr. Gladfelter became connected with the Washington, Baltimore & Annapolis Railway when the road was opened for service. In November, 1909, after the resignation of Mr. G. H. Gall as general passenger agent of the company, Mr. Gladfelter also assumed the duties of this position.

Mr. L. C. Shipherd, one of the superintendents of the Evansville & Southern Indiana Traction Company, Evansville, Ind., has been appointed general superintendent of the company, in which capacity he will succeed to the duties which will be relinquished on Jan. 1, 1911, by Mr. Fletcher M. Durbin, the present general manager of the company, who, as previously noted in the Electric Railway Journal, has accepted a position with the operating department of J. G. White & Company, Inc., New York, N. Y. Mr. Shipherd has been connected with the Evansville & Southern Indiana Traction Company and its predecessor, the Evansville Electric Railway, for several years. He was formerly connected with the St. Louis & Suburban Railroad, St. Louis, Mo. As superintendent of the Evansville & Southern Indiana Traction Company Mr. Shipherd was in charge of the Princeton division of the company. As general superintendent of the company he will have jurisdiction over all the lines of the company.

Mr. Louis A. Mitchell has been appointed superintendent of roadway of the Indiana Union Traction Company, Anderson, Ind., to succeed Mr. W. C. Sparks, who has accepted the position of general manager of the Rockford & Interurban Railway, Rockford, Ill. Mr. Mitchell was graduated from Cornell University, in June, 1902, with the degree of civil engineer. Following his graduation from Cornell and until Aug. 1, 1902, he assisted Prof. G. S. Williams at Cornell in experimental hydraulic work. From Aug. 1, 1902, until June 1, 1903, Mr. Mitchell was connected with the Utica & Mohawk Valley Railway, Utica, N. Y., first as transitman for a period of three months, and then as assistant engineer in charge of a field party. Mr. Mitchell next became connected with the United States Geographical Survey, with headquarters at Utica, N. Y., and on July 1, 1903, he became connected with the Consolidated Water Company, Utica, N. Y., and remained with this company until Aug. 1, 1903, when he accepted the position of assistant resident engineer of the Canadian Pacific Railway at Montreal, Que., in which capacity he continued until Nov. 1, 1904. Mr. Mitchell was next appointed engineer of the American Railway Insurance Company, Cleveland, Ohio, and served with this company from Nov. 1, 1904, until July 1, 1908. From July 1, 1908, to Sept. 1, 1908, he assisted Mr. Wilbur J. Watson, a consulting engineer, with offices at Cleveland, Ohio. Entering the employ of the Standard Fire Extinguisher Company, Cleveland, Ohio, as contracting agent. Mr. Mitchell served with that company from Sept. 1, 1908, until July 1, 1909. Mr. Mitchell resigned from the Standard Fire Extinguisher Company to become engineer in charge of construction of the 21 miles of electric railway for the New York & North Shore Traction Company, Flushing, N. Y., and continued with this company from July 1, 1909, until Nov. 1, 1910.

OBITUARY

Walter L. Pierce, general manager and director of the Lidgerwood Manufacturing Company, vice-president of the Gorton & Lidgerwood Company, and treasurer of the Hayward Company, New York, N. Y., died suddenly of heart disease, on Dec. 9, 1910.

Frederick G. Ely, director of the Pressed Steel Car Company, Pittsburgh, Pa., died on Dec. 12, 1910. Mr. Ely was connected with the railway supply business for many years. He was a brother of Mr. T. N. Ely, chief of motive power on the Pennsylvania Railroad.

Construction News

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

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

RECENT INCORPORATIONS

Moodus & East Hampton Electric Railway, Moodus, Conn.—Application for a charter has been made in Connecticut by this company to build an electric railway to connect Moodus, East Hampton and Marlboro Mills. [E. R. J., May 18, '07.]

Bloomington, Decatur & Champaign Electric Railway, Bloomington, Ill.—Incorporated in Illinois to build an electric railway from Bloomington to Champaign, via Decatur. Capital stock, $3,525,000. Incorporators and directors: B. E. Bramble, W. H. Carnahan, Geo. R. McComb, L. Campbell and E. S. Cole, all of Champaign, Ill.

***Chicago, Terre Haute & Southeastern Railway, Chicago, Ill.**—Incorporated in Illinois to build an electric railway from a point in Edgar County, Illinois, to Chicago Heights. Capital stock, $2,500,000.

***Imperial Traction Company, Ottawa, Ont.**—Application for a charter will be made by this company to build proposed railways, telegraph and telephone lines to connect Hamilton, Guelph, Berlin, Stratford, St. Mary's London, Ingersoll, Woodstock and Brantford and back to Hamilton, with branches to Niagara Falls and to Sarnia.

***Darby, Media & Chester Cut-off Railway, Chester, Pa.**—Application will be made for a charter by this company to build an electric railway in Chester County. It will carry passengers, freight and express matter. Incorporators: Charles O. Kruger, president and general manager of the Philadelphia Rapid Transit Company; G. W. Mantz, Thomas K. Bell, chief engineer of the United Traction Company, Reading, Pa.; Alexander Rennick, vice-president and assistant general manager of the Philadelphia Rapid Transit Company, and Frank W. Janny.

***Rock Island, Texico, Farwell & Southern Railway, Farwell, Tex.**—Chartered in Texas to build a 75-mile steam or electric railway from Farwell to a point on the south line of Cochran County, about five miles east of the New Mexico boundary. Capital stock, $200,000. Incorporators: M. T. Healy, S. H. Witten and D. A. Lurthicum, all of Farwell, Tex., and J. W. Childers, K. K. Runnels, T. B. Martin and Thomas J. Allens, all of Texico, N. Mex.

FRANCHISES

Sacramento, Cal.—The Sacramento Electric, Gas & Railway Company has asked the City Council for franchises to extend its K Street and Twenty-first Street lines in Sacramento.

Danbury, Conn.—The Danbury & Bethel Street Railway will apply to the General Assembly for an extension of time of its franchise for the completion of its railway in Danbury.

New Haven, Conn.—The Connecticut Company has asked the General Assembly for permits to build various extensions to its lines in Fairfield, New Haven and New London Counties.

Logansport, Ind.—The Logansport & Southern Traction Company, Frankfort, has received a franchise from the County Commissioners to build an interurban railway through Clinton County. The terms of the franchise make it incumbent to complete the railway within two years. This proposed line will run through Carroll and Cass Counties. A franchise has been secured from Cass County and will be asked for in Carroll County. James R. Brown is interested. [E. R. J., Oct. 8, '10.]

Baltimore, Md.—The Wicomico Electric & Power Company has applied to the Public Service Commission for the approval of a proposition to build a 30-mile electric railway from Nantieoke Point to Salisbury. M. V. Brewington, president. [E. R. J., Dec. 17, '10.]

Palmyra, Mo.—The Hannibal & Northern Missouri Railroad has received a franchise from the City Council to build its tracks over certain streets in Palmyra. This proposed 100-mile electric railway will connect Hannibal, Palmyra, Bethel, Sue City, La Plata and Philadelphia. J. W. Latimer, Galesburg, secretary. [E. R. J., Dec. 10, '10.]

Caldwell, N. J.—The Pine Brook Electric Railway has asked the Morris County Board for a franchise to build a 10-mile electric railway between Pine Brook and Denville. This proposed railway has been organized to connect with the Caldwell and Newark electric lines of the Public Service Railway. At Denville it will connect with the Morris County Traction Company's line, which will give direct line to Lake Hopatcong from Newark. William Kerris, Pine Brook, is interested. [E. R. J., Oct. 22, '10.]

***Lambertville, N. J.**—The Business League of Lambertville has asked the City Council for a franchise to build an electric railway in Lambertville. The line will be extended to Trenton.

Madison, N. J.—The Morris County Traction Company, Morristown, has received a franchise from the Council to build in Madison.

***Niagara Falls, N. Y.**—The Niagara Falls, Dunnville & Welland Electric Railway has applied to the Stamford Township Council for a franchise. The line will extend from Niagara Falls to Welland, via Dunnville. [E. R. J., Oct. 1, '10.]

***Lebanon, Ohio.**—The Lebanon & Xenia Traction Company has received a two-year extension to its franchise, in which time to begin the construction of its railway in Lebanon.

Xenia, Ohio.—The Ohio Electric Railway has received a franchise from the County Commissioners at Xenia to enter Osborn by a new route, eliminating several dangerous curves.

Montavilla, Ore.—The Mount Hood Railway & Power Company, Portland, will ask the Council for a franchise to build an electric railway over certain streets in Montavilla.

Portland, Ore.—R. C. Gillis, representing the Mount Hood Railway & Power Company, has asked the City Council for two franchises to build electric lines and a lighting system in Portland.

***Sharon, Pa.**—The City Council will soon be asked for a franchise to build a new electric railway in Sharon. The proposed line will begin at the corner of Broadway and Haywood Street and will run over Haywood Street as far as Stambaugh Avenue beyond the borough line, thence to State Street, Sharon. Plans have already been drawn for this new line.

Salt Lake City, Utah.—The Utah Light & Railway Company has applied to the City Council for two franchises, to extend its tracks over streets in Salt Lake City. This company has also applied to the County Commissioners for two franchises, one from the city limits, on the Upper County Road to Halliday, and the second from the city limits on West Temple Street to Twelfth Street, south.

Vancouver, Wash.—The Spokane, Portland & Northern Railway, Spokane, has received a franchise from the Council to build its tracks on certain streets in Vancouver. A. M. Dewey, Spokane, is interested. [E. R. J., Dec. 10, '10.]

TRACK AND ROADWAY

Birmingham Railway, Light & Power Company, Birmingham, Ala.—This company is double-tracking its railway on South Fifteenth Street, from the corner of Avenue C to a point south. The Avenue B loop will be doubled from Twentieth Street to Avenue I, on the South Fifteenth Street line, in Birmingham.

***San Luis Obispo, Cal.**—A. M. Bianchi, Cayucos, and James E. McFee are interested in a plan to build an electric railway from San Luis Obispo to San Simeon, and from Cayucos to Paso Robles.

San Joaquin Valley Electric Railway, Stockton, Cal.—This company has awarded the contract to Moriarity & Perkins, 503 Market Street, San Francisco, for building a reinforced concrete bridge over the Stanislaus River south of Ripon. The concrete work will be of crushed rock and on each end of the structure there will be abutments and about 900 ft. of trestle. Morris L. Brackett is interested. [E. R. J., Nov. 19, '10.]

***New Britain, Conn.**—Frank F. Hanford and Chas. F.

Lewis, Berlin, will soon apply for a charter to build a proposed 9-mile electric railway between New Britain and Meriden.

Atlanta & Carolina Railway, Atlanta, Ga.—This company has purchased material for building 30 miles of its proposed railway to connect Atlanta and Augusta, a distance of about 200 miles. Matthew Mason, chief engineer.

Decatur Southern Traction Railway, Decatur, Ill.—This company has filed a mortgage in favor of the Knickerbocker Trust Company, New York, which has agreed to finance the proposition. This proposed 35-mile electric railway will connect Decatur, Macon, Assumption and Pana. From Pana the line will go to Witt and southeast to East St. Louis, using the new McKinley bridge across the Mississippi River. H. C. Simmons, Virden, secretary. [E. R. J., Dec. 3, '10.]

Tri-City & Northeastern Interurban Railway, Port Byron, Ill.—This company expects to be in a position in the spring to bond its proposed 23-mile electric railway to connect Moline, East Moline, Watertown, Hampton, Rapid City, Port Byron, Cordova and Albany. Capital stock, authorized, $10,000. Officers: J. W. Simonson, Port Byron, president; W. H. Ashdown, vice-president; G. W. Turner, Hampton, secretary; C. E. Peck, Albany; R. S. Woadburn, Moline, purchasing agent, and Wallace Treckler, chief engineer. [E. R. J., July 23, '10.]

Beech Grove Traction Company, Indianapolis, Ind.—This company has laid tracks for more than half the distance between Indianapolis and Beech Grove. The overhead work will be completed within a few days. C. F. Smith, secretary. [E. R. J., Dec. 3, '10.]

Indianapolis & Cincinnati Traction Company, Indianapolis, Ind.—At the request of President Charles L. Henry, of this company, President Reiss, of the Chamber of Commerce of Hamilton, Ohio, has appointed a committee to confer with the officials of the line regarding an extension to Hamilton, New Liberty, College Corners and Oxford, Ohio.

Bangor Railway & Electric Company, Bangor, Me.—It is announced that this company is contemplating extensive plans for electric railway and electrical development in the vicinity of Bangor. It expects to rebuild the old Veazie dam on the Penobscot River above Bangor, or else to build a dam in a location at or near Basin Mills. Plans for a public bridge between Bangor and Brewer strong enough to carry electric cars are also to be prepared.

Wicomico Electric & Power Company, Salisbury, Md.—This company has filed for approval with the Public Service Commission of Maryland preliminary plans providing for the construction of a 30-mile electric railway from Salisbury to Nanticoke Point. M. V. Brewington, president. [E. R. J., Dec. 17, '10.]

Worcester & Providence Street Railway, Worcester, Mass.—At the annual meeting of this company, which expects to build a proposed electric railway between Worcester and Providence, the following officers were elected: Walter F. Angell, Providence, president; William A. Leete, treasurer and clerk, and A. George Bullock, Waldo Lincoln, Worcester; Samuel Durfee and Frank W. Matteson, Providence, and Lincoln Davis, Boston, are directors. [E. R. J., Dec. 17, '10.]

Mankato (Minn.) Electric Traction Company.—This company, it is reported, will build an extension of its railway from Mankato to St. Peter via Kasota, a distance of about 12 miles. H. E. Hance, general manager.

Dunkirk & Jamestown Electric Railway, Jamestown, N. Y.—A company is being organized to build an electric railway to connect Fredonia, Lily Dale, Cassadaga, Moons, Sinclairville, Gerry, Ross Mills and Falconer. Among those interested are: A. N. Broadhead, president of the Jamestown Street Railway and the Chautauqua Traction Company; James A. Hughes, of Jamestown, and John Wurtenburg, of Cassadaga. [E. R. J., Nov. 5, '10.]

Frontier Electric Railway, Niagara Falls, N. Y.—This company has filed plans with the County Clerk for a new high-speed electric railway to extend from Buffalo to Niagara Falls along private right of way, which virtually parallels the tracks of the Erie Railroad. T. S. Ramsdell, president. [E. R. J., Sept. 24, '10.]

Spray Utilities & Terminal Company, Spray, N. C.—The Luck Construction Company has been awarded a contract by this company to build a 10-mile electric railway from Ridgeway, Va., to Spray, N. C. S. H. Marshall is interested. [E. R. J., Dec. 17, '10.]

Ohio Electric Railway Company, Cincinnati, Ohio.—It is said that $200,000 will be spent in improvements of the tracks of this company between Springfield and Dayton during 1911. It is proposed to build the line along the Erie right of way between the Masonic Home, near Springfield and Durbin. Several sharp curves will be eliminated and a number of new bridges will be built.

Portsmouth Street Railway & Light Company, Portsmouth, Ohio.—This company will build an extension between Sciotoville and Hanging Rock, where it will connect with the Ohio Valley Electric Railway. It is expected to begin work next summer.

Youngstown & Southern Railway, Youngstown, Ohio.—It is reported that plans are under consideration by this company for double-tracking the entire line between Youngstown and Leetonia.

Lehigh Valley Transit Company, Allentown, Pa.—At a recent meeting of the board of directors of this company it was decided to improve the Philadelphia division by making a large cut-off in the Borough of Coopersburg. This cut-off will be about 1 mile long, and will save a number of curves and a bad grade, and will improve running time considerably.

Southern Cambria Railway, Johnstown, Pa.—This company is considering plans to raise $200,000 for the purpose of building an extension of its line from Mineral Point to Ebensburg.

Titusville (Pa.) Electric Traction Company.—Plans for building a 2-mile extension of this company's line are being considered by the company. They will also include the construction of a new bridge over Oil Creek. Attempts will be made to buy or lease from the Pennsylvania Railroad the old line from the Tryonville station to Canadohta Lake, which could be electrified or used as a road for the operation of a gasoline car service.

Columbia Electric Street Railway, Light & Power Company, Columbia, S. C.—This company has completed and placed in operation its railway extension to the Shandon annex section in Columbia.

Temple (Tex.) Northwest Railway.—This company proposes to build an extension from Gatesville to Hico, a distance of about 40 miles. This projected 100-mile railway will connect Temple, Comanche, Bell, Coryell and Hamilton Counties. W. E. Dozler, Temple, general manager. [E. R. J., June 18, '10.]

Morgantown & Dunkard Valley Railroad, Morgantown, W. Va.—This company has issued bonds to the amount of $400,000. The proceeds are to be used for building an extension from Jimtown to Blacksville, and for the erection of a new power house.

Gogebic & Iron Counties Railway & Light Company, Ashland, Wis.—This company will begin work about Jan. 1 on its proposed interurban railway to connect Ironwood and Bessemer. Capital stock, authorized, $700,000. Bonds authorized, $2,500,000. Its power station will be located at Bessemer. The company has received a franchise for furnishing power for lighting. Officers: W. M. Reid, Ashland, president; I. S. Smith, secretary; A. W. Sanboone, treasurer; M. M. Reid, general manager; F. D. Sullivan, superintendent, and C. A. Hutchinson, chief engineer. [E. R. J., Dec. 10, '10.]

***Green Bay, Algoma, Sturgeon Bay & Northern Traction Company, Manitowoc, Wis.**—This company has been organized to build an electric railway through the region north of Two Rivers. The power will be furnished from the plant at High Falls. W. Frye, Chicago, is interested.

SHOPS AND BUILDINGS

Northern Electric Railway, Chico, Cal.—This company has decided to build a depot at the junction of North Sacramento and Arcade Creek, in Sacramento. The structure will be similar to the depot at Oreville.

Fresno, Hanford & Summit Lake Interurban Railway, Fresno, Cal.—It is said that this company will begin work

within the next month building a station on I Street in Fresno. The cost is estimated to be about $25,000. F. S. Granger, general manager.

Connecticut Company, New Haven, Conn.—Improvements will soon be made by this company on the old Ferry Street car house now used as a paint shop in New Haven. The addition will be 104 ft. x 45 ft. The cost is estimated to be about $9,000.

Alton, Jacksonville & Peoria Railway, Alton, Ill.—This company has decided to build car houses at Granite City to take the place of the old structures now at Alton. The cost is estimated to be about $25,000.

East St. Louis & Suburban Railway, East St. Louis, Ill.—This company is receiving bids for building a car house in Granite City. The structure will be one story 107 ft. x 226 ft. The frame will be of corrugated iron. C. F. Hewitt, East St. Louis, superintendent.

Boston (Mass.) Elevated Railway.—This company will remodel its Sullivan Square Station in the near future.

Erie (Pa.) Traction Company.—This company has taken possession of its new station at Cambridge Springs. The structure is 70 ft. x 16 ft., and built of brick.

POWER HOUSES AND SUBSTATIONS

Fresno, Hanford & Summit Lake Interurban Railway, Hanford, Cal.—It is said that this company proposes to build a new power house at a point north of Fowler and 10 miles southeast of Fresno. The cost is estimated to be about $100,000.

Valparaiso & Northern Railway, Valparaiso, Ind.—This company has arranged with the Northern Indiana Gas & Electric Company for a 10-year power contract for sufficient power to operate this railway and the La Porte-Gary division of the Chicago-New York Electric Air Line Railroad. A substation, to contain three 300-kw converters, will be built at the junction of the two lines. By Feb. 1, 1910, or soon after, cars will begin operating between La Porte and Chesterton, Ind., using 1200 volts and taking power from a temporary station until the substation can be completed. Lewis E. Woodward, secretary.

Minneapolis, St. Paul, Rochester & Dubuque Traction Company, Minneapolis, Minn.—It is stated that this railway, which is operating with gasoline cars, will build a power house in South Minneapolis.

Columbus Railway & Light Company, Columbus, Ohio.—This company is now installing three new motor generators in the power house of the Columbus Edison Company, in East Gay Street, to transform the alternating current from the new 4000-kw generators in the Spring Street power station into the direct current.

Toledo (Ohio) Railways & Light Company.—This company has purchased from the General Electric Company one 300-kw rotary converter, including transformers and switchboard.

Dominion Power & Transmission Company, Ltd., Hamilton, Ont.—This company announces that it will spend $350,000 in making extensions to its power plant. A new substation will be erected at the corner of Cannon Street and Stirton Street, in Hamilton, to cost $100,000. It will install a new 6800-kw generator at the generating station at Power Glen. J. B. Griffith, purchasing agent.

Mt. Hood Railway & Power Company, Portland, Ore.—This company has purchased from the Peninsular Lumber Company a tract of land on the Willamette River for a site for its first auxiliary steam power plant. The contract has been let to Chas. E. Moore & Company, San Francisco, for the erection of the plant, the project to be completed within four months.

Buffalo & Lake Erie Traction Company, Fredonia, N. Y.—According to press reports two boilers in the power house of this company, at Fredonia, N. Y., exploded on Dec. 16, killing two firemen and causing a property loss said to amount to $150,000, as several buildings near the power station were also damaged.

Morgantown & Dunkard Valley Railroad, Morgantown, W. Va.—This company is said to be considering plans for building a new power house in Morgantown.

Manufactures & Supplies

ROLLING STOCK

York (Pa.) Railways has ordered a standard Brill sweeper from the J. G. Brill Company.

Hudson & Manhattan Railroad, New York, N. Y., is in the market for 80 pairs of trucks.

Pittsburgh (Pa.) Railways has ordered 5000 steel wheels from the Forged Steel Wheel Company, Butler, Pa.

Holyoke (Mass.) Street Railway has ordered one 8-wheel shear plow from the Wason Manufacturing Company.

Rio de Janeiro Tramway Light & Power Company, Rio de Janeiro, Brazil, is in the market for 50 pairs of trucks. The bodies that will be used on these trucks will be built in the company's own shops.

Macon Railway & Light Company, Macon, Ga., reported in the ELECTRIC RAILWAY JOURNAL of Nov. 5, 1910, as having ordered eight cars, has ordered six 30-ft. 8-in. pay-as-you-enter cars from The J. G. Brill Company.

Boston (Mass.) Elevated Railway has ordered 25 pairs of trucks from the Standard Motor Truck Company, and the same number from The J. G. Brill Company. The bodies to be placed on these trucks were ordered some time ago.

Brooklyn Rapid Transit, New York, N. Y., has purchased from The J. G. Brill Company two gravity sprinkling cars, with a capacity of 5000 gallons each. This company has also purchased one McGuire-Cummings and six Smith & Wallace sweepers.

Chicago (Ill.) Railways will build 250 double-truck cars for city service on the lines of the Consolidated Traction Company. The designs for these cars have not been completed, but it is stated that they will conform to the type of 49-ft. closed cars now operated. The designs for the new cars will be approved by the Board of Supervising Engineers, Chicago Traction Company.

United Railroads, San Francisco, Cal., noted in the ELECTRIC RAILWAY JOURNAL of Sept. 10, 1910, as having ordered 80 pay-as-you-enter cars from the Jewett Car Company, has specified the following details for these cars:

Seating capacity 44	Bumpers, Hedley anti-climber
Weight (body only).16,000 lb.	
Bolster centers....20 ft. 10 in.	Curtain fixtures..Curt. S. Co.
Length of body....32 ft. 4 in.	Curtain material...Pantasote
Over vestibule.....47 ft.	Gongs .....Am. Car Co.
Width over sills...8 ft. 7½ in.	Destination signs ....Hunter
Over posts at belt.....9 ft.	Hand brakes .....Peacock
Sill to trolley base.....9 ft.	Headlights .....dash
Height top of rails to sills, 31¾ in.	Push button signal...Consol.
	Sanders .....air
Body .....wood	Seats .....longitudinal
Interior trim.....ash	Seating material.....rattan
Underframe .....wood	Step treads.....Universal
Car trimmings.....bronze	

TRADE NOTES

S. L. Kemps has been elected secretary of the T. H. Symington Company, Baltimore, Md.

Ackley Brake Company, New York, N. Y., has received an order for 60 brakes, with ratchet handles and staffs complete, from Japan.

Consolidated Car Heating Company, New York, N. Y., has received an order to equip 140 cars of the Hudson & Manhattan Railroad with heaters.

Canadian Car & Foundry Company, Montreal, Can., has opened a New York office at 30 Church Street, in charge of Robert E. Powers, sales manager.

Pittsburgh Spring & Steel Company, Pittsburgh, Pa., has moved its New York office, which is in charge of J. N. Brownrigg, to suite 2038, Grand Central Terminal.

Wonham, Sanger & Bates, New York, report receipt of an order from the Union Railway, New York, N. Y., for 200 H-B Universal Life Guards to equip the 100 new convertible cars just ordered.

T. H. Price has resigned from the Horace L. Winslow Company and accepted a position as representative in the railway lubrication department of the Indian Refining Company, Cincinnati, Ohio.

Charles J. Nash, chief mechanical engineer of the W. H. Miner Company, has been appointed representative of the Westinghouse Air Brake Company, with headquarters in the Railway Exchange Building, Chicago.

Whipple Supply Company, New York, N. Y., has secured a two-year contract for gears and pinions from the Syracuse (N. Y.) Rapid Transit Railway and the Oneida Railway. The contract was taken on the usual mileage guarantee.

J. G. Bower has been appointed assistant manager of sales, western district, of the Pressed Steel Car Company and the Western Steel Car & Foundry Company, to take effect Jan. 1, 1911, with offices at the Old Colony Building, Chicago, Ill.

Jeffrey Manufacturing Company, Columbus, Ohio, has opened a new office in the Fourth National Bank Building, Atlanta, Ga., with D. C. Rose, formerly with the Dodge Manufacturing Company, as manager. This is the tenth branch office of the company to be opened in the United States.

Northern Engineering Works, Detroit, Mich., have installed two 25-ton Northern cranes, one in the machine shop and the other in the power station of the Detroit River Tunnel Company. The works have also installed several similar cranes in the buildings of the Pennsylvania Railroad & Terminal Company, New York.

Curtain Supply Company, Chicago, Ill., has received an order from the United Railroads, San Francisco, Cal., to supply curtains with No. 88 ring fixtures and Rex rollers for 80 cars. This company has also received an order from the Boston Elevated Railway to supply curtains with No. 48 ring fixtures and Rex rollers for 50 cars.

W. N. Matthews & Brother, St. Louis, have just appointed Victor L. Crawford their eastern representative, with headquarters in New York. Mr. Crawford has been connected with W. N. Matthews & Brother for the past five years in the Western territory. His office in New York will be in the Glackner Building, 227 Fulton Street.

Morgan Engineering Company, Alliance, Ohio, has erected a large sign in Alliance with the letters hung perpendicularly down the side of a 400-ft. smokestack, which spells the name "Morgan." The letters, which are about eight feet square, have a total of 310 electric bulbs. It is estimated that it will cost the company between $800 and $1,000 a year to operate the sign.

Sterling Fare Register Company, Newark, N. J., has been incorporated in New Jersey to manufacture and sell the Sterling fare registers. The company has received an exclusive license from the Sterling-Meaker Company, under all its register and fittings, patents and rights. The officers of the Sterling-Meaker Company are the same as those of the Sterling Fare Register Company.

Vonnegut Hardware Company, Indianapolis, Ind., will operate its machinery department after Jan. 1, 1911, under the name of the Vonnegut Machinery Company, as a branch of the Vonnegut Hardware Company. The Vonnegut Machinery Company will be located at 43 and 45 South Meridian Street. The sales organization will include Anton Vonnegut, Charles Rassman and C. B. Williamson.

Automatic Appliance Company, Boston, Mass., has purchased the entire business, good-will and accounts of the Couch & Seeley Company and the Transfer Issuing Machine Company. The business of these companies will be carried on by the Automatic Appliance Company at the office and factory formerly occupied by the Couch & Seeley Company, 162-172 Columbus Avenue, Boston. The officers of the Automatic Appliance Company are: F. H. Whitman, president; Adams D. Claflin, treasurer, and R. L. Whitman, general manager.

Richardson-Phenix Company, Milwaukee, Wis., a consolidation of the Sight Feed Oil Pump Company, Milwaukee, and the Phenix Lubricator Company, Chicago, has completed the equipment of its new factory in Milwaukee, which it claims is the largest plant in the country devoted exclusively to the manufacture of lubricating devices. The new company will manufacture the well known Richardson and Phenix mechanical lubricators, individual oiling systems, power plant oil filters and general appliances for lubrication, for cylinder lubrication and also for machinery.

Union Switch & Signal Company, Pittsburgh, Pa., held a stockholders' meeting on Dec. 14, 1910, to act upon the recommendation of the directors to increase the capital stock. It was voted to increase the capital stock from $2,500,000 to $5,000,000 by the issue of $2,500,000 of common stock. At a meeting of the directors, held on the same day, the usual dividend of 3 per cent quarterly was declared on the preferred and the common stock, payable on Jan. 10, 1911, to the stockholders of record Dec. 31, 1910. The directors also decided to issue to stockholders of record Dec. 31, 1910, a special stock dividend of 60 per cent of their holdings. Of the remaining 40 per cent of the new stock authorized by the shareholders 20 per cent, or 10,000 shares (par value $50 each), will be offered to the shareholders at $75 per share. The remainder of the new stock authorized will be held in the treasury.

ADVERTISING LITERATURE

International Register Company, Chicago, Ill., has recently issued bulletin No. 80, illustrating and describing the Heeren enameled badges.

Allis-Chalmers Company, Milwaukee, Wis., has reprinted bulletin No. 1501, in which Allis-Chalmers Reliance belted Corliss engines are described.

Dean Bros. Steam Pump Works, Indianapolis, Ind., have issued Catalog No. 83, which illustrates and describes special boiler feed and pressure pumps.

Stromberg-Carlson Telephone Manufacturing Company, Rochester, N. Y., has issued several new circulars, covering various types of battery instruments.

Bonney-Vehslage Tool Company, New York, N. Y., has issued a 36-page catalog in which its various styles of ticket punches are listed and illustrated.

Osborn Manufacturing Company, Cleveland, Ohio, has issued catalog No. 131, in which, among other things, all kinds of car and track brushes and brooms manufactured by it are illustrated and described.

Hess-Bright Manufacturing Company, Philadelphia, Pa., has issued two catalog sheets on ball bearings and their correct use. Sheet No. 62 is devoted to bearing mountings, without shoulders on shaft, and sheet No. 63 to ball-bearing mounting and demounting tools.

American Bank Note Company, New York, has issued an ingenious calendar for 1911. It is printed in the form of four excursion tickets good for passage "from the order desk to the American Bank Note Company." Each ticket contains three coupons, or monthly calendars, making the 12 for the year.

Babcock & Wilcox Company, New York, N. Y., has issued in pamphlet form, with notes by Lieut.-Commander H. C. Dinger, U. S. N., the report of a test of Babcock & Wilcox boilers for the U. S. battleships Wyoming and Arkansas. This report was reprinted from the November, 1910, issue of the *Journal of the American Society of Naval Engineers.*

General Electric Company, Schenectady, N. Y., has issued bulletins Nos. 4662A, 4790, 4794. In bulletin No. 4662A Thomson watthour meters for switchboard service are described, and bulletin No. 4790 describes electric mine locomotives. In bulletin No. 4794 the 1200-volt d.c. interurban lines of the Milwaukee Electric Railway & Light Company are described.

NEW PUBLICATIONS

Proceedings of Master Car Builders' Association. Published by the association, J. W. Taylor, secretary, Chicago, Ill., 1910. Cloth, 850 pages.

This volume contains the full report of the 1910 convention of the Master Car Builders' Association, which is now in the forty-fourth year of its existence. Among the committee reports of special interest to electric railway officers which were presented at this convention were the following: Train brake and signal equipment; tests of brake shoes; coupler and draft equipment; car wheels; classification of cars; mounting pressures for wheels and axles and lumber specifications. The standards and recommended practices of the association are reprinted in full, including the 63 double-page illustrated plates to which the text refers.