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CONTENTS.

Reviewing National Convention Reports at a State Meeting

A commendable feature of the quarterly meeting of the Street Railway Association of the State of New York held this week in Syracuse was the review of several reports made by committees at the last convention of the American Electric Railway Association. Thus Mr. French contributed an excellent synopsis of the report of the committee on way matters, Mr. Schreiber presented some interesting comments on certain points brought up in the same report, while Mr. Harvie discussed the work of the Engineering Association's committee on car equipment. The talks on the training of transportation employees also had a close bearing on the work done along this line of endeavor at Atlantic City in 1910. Those who are familiar with the hurly-burly inseparable from a big convention will appreciate how much more can be got out of the papers and reports there presented if they can be reviewed in the more informal surroundings of a local association meeting. This practice has the further merit of bringing out the sentiments of many important operators who could not attend the national convention, so that the different committee members are made better acquainted with the general trend of opinion on the subject which has been assigned to them.

Through Rates and Joint Routes in New York City

The acceptance by the receivers of the Metropolitan Street Railway of the terms of the order requiring the company to exchange transfers with the Fifty-ninth Street crosstown line indicates their desire to meet a public need in a liberal spirit. The concession is mainly one of principle. No one can seriously claim that the 8-cent and the 10-cent fare to be charged for a ride, with one or two transfers respectively, over the lines of the Metropolitan Street Railway and of the Central Park, North & East River Railroad is not an adequate charge compared with the rate paid on other parts of the Metropolitan system. At the same time we can easily realize that the number of the abuses practised with the present transfer system and the loss to the company which has followed its extension and illegitimate use have made the management dread the establishment of new transfer points. Another serious problem is the proper division of the fare. Should it be shared equally, or should it be divided according to the average distance traveled per passenger on the joint transfer? These questions have an important bearing on future arrangements of the same kind. But it is equally true that the order sets the precedent of a charge for transfers, and of a still higher charge for a double transfer. If the public becomes used to paying for the privilege of changing cars at Fifty-ninth Street it will not seem so strange to make the same payment for the extra service rendered when one changes cars at Twenty-third Street, or at Fourteenth Street, or at any other junction point.

The Result of a Track Improvement

A good track may justly be considered as the foundation upon which the entire physical well-being of a railway is built. Everything in important betterments in the track structure is sure to make its influence felt to advantage in more than one direction. A striking proof of this fact was offered recently on a system where a branch of about 21 miles was overhauled by straightening out some bad curves, reballasting low spots, replacing battered joints and otherwise improving the roadway. The immediate consequences were the reduction of the running time from 90 minutes to 60 minutes, and of the number of cars required to operate the schedule from three to two. Another and even more welcome result was an increase of 33 1/3 per cent in the gross receipts. The annual saving in trainmen's wages alone, conservatively estimated at say $2,500, would have paid 4 per cent interest on an improvement loan of $62,500; but to this saving should be added that due to furnishing power for and maintaining two cars on a good track instead of three on a bad one, not to speak of the decreased accident liability. The increase in receipts proves how quickly the public will take advantage of faster and better service, even on a road which seems to be getting all the business possible. Thus the wise expenditure made in this case to improve the track not only produced a large reduction in the operating expenses, but by swelling the gross earnings with new business proved that the traffic on this particular line had not reached its saturation point under the old conditions.

A Greater Subway System

Negotiations between the Interborough Rapid Transit Company and the New York Public Service Commission for the First District have crystallized into a proposal for sane, workable extensions of the present subway system. The new plan overshadows in practical value the modification of the proposed tri-borough subway offered by President McAdoo, of the Hudson & Manhattan Railroad. It will afford, with the existing subway, a system linking the four boroughs of Manhattan, Brooklyn, Queens and the Bronx and operated by the present company at a straight fare of five cents to any point. It promises the long-needed relief to the lower West Side and the upper East Side of Manhattan Island. The capital requirements of the plan are even more reassuring. Of the $128,000,000 estimated cost the company will furnish $75,000,000, leaving $53,000,000 for the city to advance. That sum the city now has available for subway construction. The proposal also provides for the extension of the Third Avenue elevated line and its equipment with a third track. The details of the plan are now undergoing analysis by the representatives of the public regulating bodies, and if they receive the same commendation which is being accorded to the general features it appears as if the city and the company, after years of vexatious delay, will make a deal. The statement of Mr. McAdoo that his offer would be withdrawn on Dec. 15 may have hastened the completion of the Interborough proposition, and if that be the case he is entitled to the thanks of the community, for action, and not delay, is the prime necessity in the solution of the transit problem in New York. If fair terms to each interest are assured by the new plan and the extensions will be capable of operation as an independent system in the future, should the city so desire, we do not see that the argument in favor of competition at any price is worth consideration.

LESSONS FROM RECENT BATTERY CAR DESIGN

It is yet too early to prophesy whether the modern storage-battery car will fulfil all the promises made for it, but it will undoubtedly have at least a good effect on the general question of the design and power consumption of the standard trolley car. This condition arises from the fact that the designers of the accumulator car must give far more thought to problems of minimum weight and maximum power efficiency than those who deal with vehicles which receive power from a central station.

If the two classes of cars are compared with regard to weight it is evident that the self-contained car is handicapped by being obliged to carry a storage battery plus all the usual electrical equipment except the trolley base and pole. Just what this means may be judged from the fact that in the very latest form of traction battery 1 lb. of cell must be carried for every 19 watt-hours output. To wipe out the difference in weight the designer has to depart radically from conventional standards. Thus, in a recent example the bold expedient has been adopted of welding the entire car frame as a unit structure. By this means the amount of steel is minimized because the different members co-operate most effectively in taking up all strains. The net result in this case is a completely equipped car weighing about 725 lb. per passenger. This figure is a very reasonable one, indeed, in view of the fact that the battery alone weighs about 3250 lb., or 81 lb. per passenger. This weight per passenger compares very favorably with such light designs as the convertible prepayment cars of the Third Avenue Railroad in New York, and it is 300 lb. to 500 lb. lighter per passenger than many cars operated in city service.

These figures show that there is apparently no question that with a full welded frame the weight of cars can be appreciably reduced without a sacrifice in strength. It is doubtful, however, whether such a construction would not present some serious difficulties from a maintenance standpoint. It is not likely, for instance, that broken parts could be re-welded without a great deal of costly stripping. Nevertheless, something might be gained by welding the floor framing and by substituting the lighter flat arch for the monitor roof. The platforms also might be welded but still be attached to the end sills as usual.

The possibilities of saving weight economically outside of the car bodies are more remote. It is likely that for given stresses some alloy steels could save a few pounds in trucks and axles. In axles, at least, the gain would not be great enough to justify, in most cases, the abandonment of the standard diameters and the journal and gear dimensions with which they are so intimately connected. The application of chrome-steel axles on the storage-battery car is no criterion, because this car is special in almost every respect.

Another field in which the storage-battery car has attained commendable results is that of maximum power efficiency per ton propelled. The splendid possibilities of anti-friction armature and journal bearings have already been demonstrated in ordinary trolley service by the recent work of the Philadelphia Rapid Transit Company; but the designers of the storage-battery car have effected a still greater power saving by using roller-bearing wheels on non-revolving axles. So far this roller-bearing wheel has been applied only to the chain-drive transmission of one particular car, but it can also be adapted to the standard forms of motor gearing. The application of anti-friction bearings and incidentally the use of high-efficiency tung-

sten lamps has kept the power consumption of the storage-battery car down to approximately 45 watt hours per ton mile. The significance of this figure may be appreciated from the fact that in A. B. Stitzer's article on "Car Tests in Philadelphia with Anti-Friction Bearings," published in the ELECTRIC RAILWAY JOURNAL of Aug. 27, 1910, the average ton-mile power consumption with plain-bearing cars was 138.2 watt hours for two-motor equipments and 151 watt hours for four-motor equipments. As both the storage-battery car and the Philadelphia cars were operated under city speed conditions, the higher power consumption of the latter cannot be laid altogether to harder track and service requirements. In this connection it is interesting to consider that if all the power-saving features of the storage-battery car could be duplicated in a trolley car, the net power consumption as measured at the generating station would be less for the trolley car, because the usual distributing losses are far below the 30 per cent which is usually assumed as a minimum of the energy lost in charging and discharging the battery.

All in all, the storage battery advocates are rendering a valuable service to the electric railway art in trying out such radical innovations in car design and power equipment as those described in the foregoing paragraphs. It is quite probable that the self-contained car will prove a boon on many lines where traffic is so light or irregular as not to warrant the installation of a system of direct supply.

THE INDUCEMENTS TO CAPITAL FIFTY YEARS AGO

An editorial reviewing the decision in which the New York Public Service Commission for the First District rejected the second plan for reorganization of the Third Avenue Railroad was published in the issue of the ELECTRIC RAILWAY JOURNAL for Oct. 1, 1910. We commented then incidentally upon the statement of the commission that dividends of 6 per cent, 7 per cent or 8 per cent probably could have been declared from the beginning and yet enough accumulated to write off the old horse-car and cable roads that have disappeared. It is clear, as we stated, that such dividends were below the going rates for money in the early days. For the sake of historical accuracy, we have searched the records of the years nearest to those in which the company was incorporated and its initial opening took place.

According to the decision of the commission, the Third Avenue Railroad Company was incorporated on Oct. 8, 1853. How soon after that the operation of the road was started we do not know, but it is probable that no great period of delay occurred. We found a statement of earnings for 1857. The facts which follow respecting money rates and the terms of sale of railroad, municipal and State bonds and of discount of commercial paper during the period 1853-59 are taken from the files of *Hunt's Merchant Magazine and Commercial Review*, later absorbed by the *Commercial and Financial Chronicle*.

In January, 1854, the money market in Boston, New York and Philadelphia was reviewed as follows: "The value of capital as shown by the street rates for prime business paper is about 9 per cent or 10 per cent per annum, and at this rate large amounts can be readily obtained. Confidence, however, is not fully established, and second or third class securities are almost unsalable. Even railroad bonds of the better class, if not strictly ratable as prime, are negotiated with difficulty."

One month later it was stated that loans had been negotiated readily outside of the banks in Boston, New York, Philadelphia and Baltimore at 9@12 per cent per annum. In March of the same year part of the time borrowers in Cincinnati were charged at the rate of 1½ per cent to 2½ per cent a month. In April the rates for prime paper in leading cities were 10 per cent to 12 per cent. On May 10, 1854, the New York & Harlem Railroad Company sold $1,700,000 of 7 per cent first mortgage bonds at an average price of 93¾.

In 1855 the tendency of commercial paper rates appears to have been a little easier. Savings banks of strength and good standing, which are doing business still, paid 4 per cent, 5 per cent and 6 per cent interest on deposits. About the middle of the year 1855 the Central Railroad of New Jersey "borrowed" to expend on the road $1,500,000 upon 7 per cent bonds at 85. In May, 1856, the sale was reported of $1,600,000 of New York City 6 per cent stock maturing in three years at par and a fraction. Several months later the Burlington & Missouri River Railroad, now a part of the Chicago, Burlington & Quincy Railroad system, sold $250,000 of 8 per cent bonds at 85. The range on two railroad bonds in the Boston market during 1856 was as follows: Illinois Central 7s, due in 1875, from 83 to 97; Michigan Central 8s, due in 1869, from 99 to 102. In 1858 United States Government notes were sold on about a 4½ per cent interest basis. New York City sold in March, 1859, $374,000 of 6 per cent bonds redeemable in 1887 at 101 to 102.

Other instances without number might be given, but these are enough to support our statement. Capital was scarce and in demand for enterprises of every character, investment and speculative. The unavailability of capital for new enterprises was more disturbing than the prices exacted by the owners of funds. The gist of the real point which the commission assumes is at issue in this part of its opinion is not, however, what the company paid for its first capital, but "what might have been." It may be observed that the commission, although suggesting, commits itself very guardedly in expressing an opinion. Thus it says: "*If* from the beginning a reasonable amount as depreciation had been set aside out of earnings to take care of the various changes which have taken place, *if* the company had been conservatively financed and expenditures carefully watched, it is *probably* true that dividends of 6 per cent, 7 per cent or 8 per cent could have been declared and yet a sufficient amount have been accumulated to write off the old horse-car and cable roads that have disappeared."

Although it is not a slight thing, we may ignore the discrepancy between 6 per cent and 8 per cent. Two per cent annually for 50 years, without compounding the interest, is 100 per cent; or for 25 years it is 50 per cent.

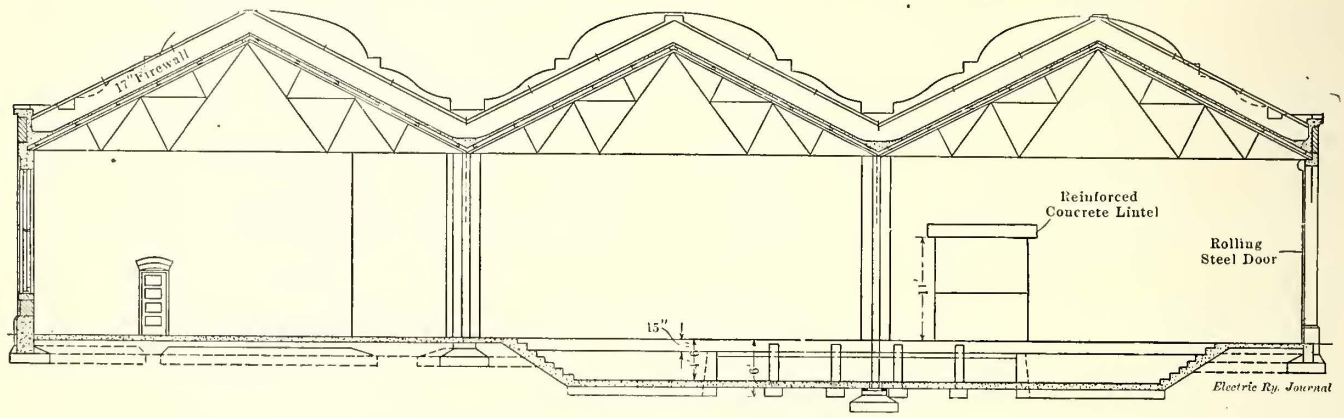
Unless the commission had facts with which to justify itself beyond peradventure, it might better, instead of hesitating in its conclusions, have withheld them altogether. The treatment of this subject tends to show that if foresight had only been equal to hindsight all would have been well with the Third Avenue Railroad system, its security holders and the public. We agree that it would have been easier for everybody concerned in this late day if those who first controlled the property had not only foreseen that the horse would pass and the cable would pass and electricity would come, but had also regulated their accounts and profits accordingly. But if the early investors or speculators had foreseen the destruction and substitution of motive power, who can say whether they would have been willing to advance funds for any but a brand new electric railway system?

NEW SHOPS OF UTAH LIGHT & RAILWAY COMPANY

Since the control of the Utah Light & Railway Company passed to the Harriman interests about four years ago, some extensive construction and rehabilitation work has been carried on in connection with the company's railway property as well as its light and power departments. In the convention issue of the ELECTRIC RAILWAY JOURNAL for Oct. 2, 1909, an extensive account was given of the improvements completed and under way at that time. The company's new car house under construction was then described, and this article has for its object some further reference to the car house and an account of the shops now being erected.

The site on which the car house and shop buildings stand consists of an entire city block located between Fifth South and Sixth South Streets and Sixth East and Seventh East Streets, a little over a mile southeast from the commercial center of the city. The block is 680 ft. square and has a general slope of 1 per cent toward the west, thus providing excellent drainage. The new car house, 430 ft. long x 229 ft. wide, is placed on the south half of the property, and, as previously described, is connected at both ends by tracks leading to the railway lines on Fifth South and Seventh East Streets. The architectural treatment is of the California Spanish Mission type, presenting a very pleasing appearance for so utilitarian a building.

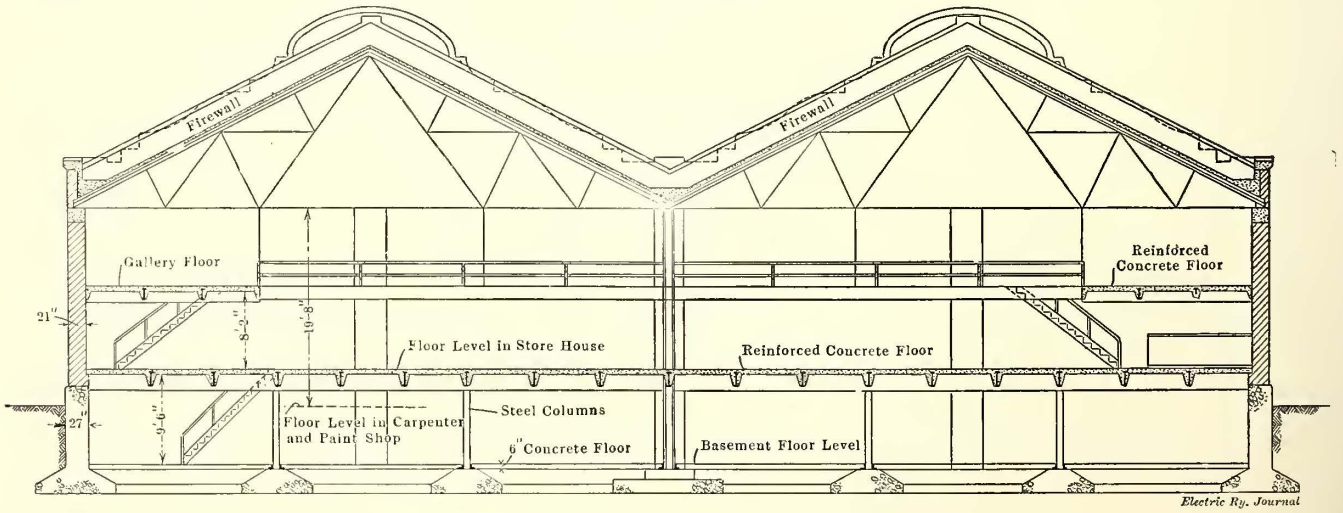
The new shops that are now nearing completion are located on the northwest quarter of the block, track connections being furnished by means of the ladder tracks leading from the west end of the car house to Fifth South Street, while the ladder on the east side of the grounds is connected by a spur leading to the east end of the transfer table pit. There are two principal shop buildings, the northerly one containing the storehouse, paint shop and carpenter shop. The southerly building contains the blacksmith shop and foundry and the machine shop. Between the two buildings is the transfer table pit, 50 ft. wide and 288 ft. in length, extending beyond the buildings at either end. The table operates on four 40-lb. rails, placed 18 in. below the yard trackage on 12-in. concrete walls spaced 16 ft. 1 in. center to center. A 6-in. gravel fill covers the entire pit.



Salt Lake Shops—Transverse Section—Machine Shop and Blacksmith Shop

CARPENTER SHOP

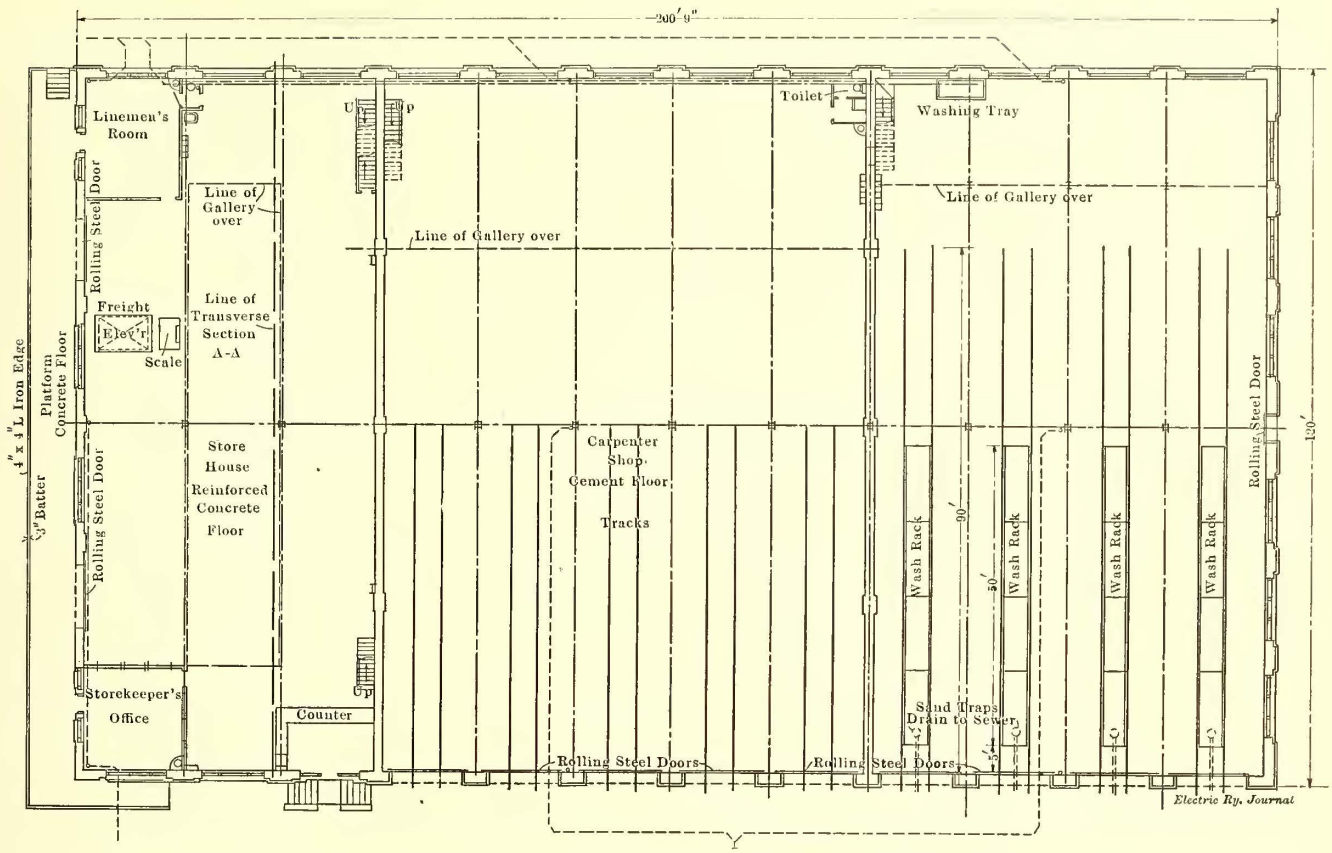
The carpenter shop building is 200 ft. 9 in. long x 120 ft. wide. The storehouse occupies 51 ft. 3 in. of the west end of the building, the paint shop 67 ft. 7½ in. of the east end and the carpenter shop the central portion, 81 ft. 10½ in., the length of each shop being the width of the building, 120 ft. The construction consists of 17-in. brick walls resting on 27-in. concrete foundation walls, with 21-in. brick pilasters carrying the steel trusses of the roof. The two division walls are of solid brick 17 in. thick, with no openings except one 3 ft. wide between the paint and carpenter shops, protected by means of a rolling steel door.



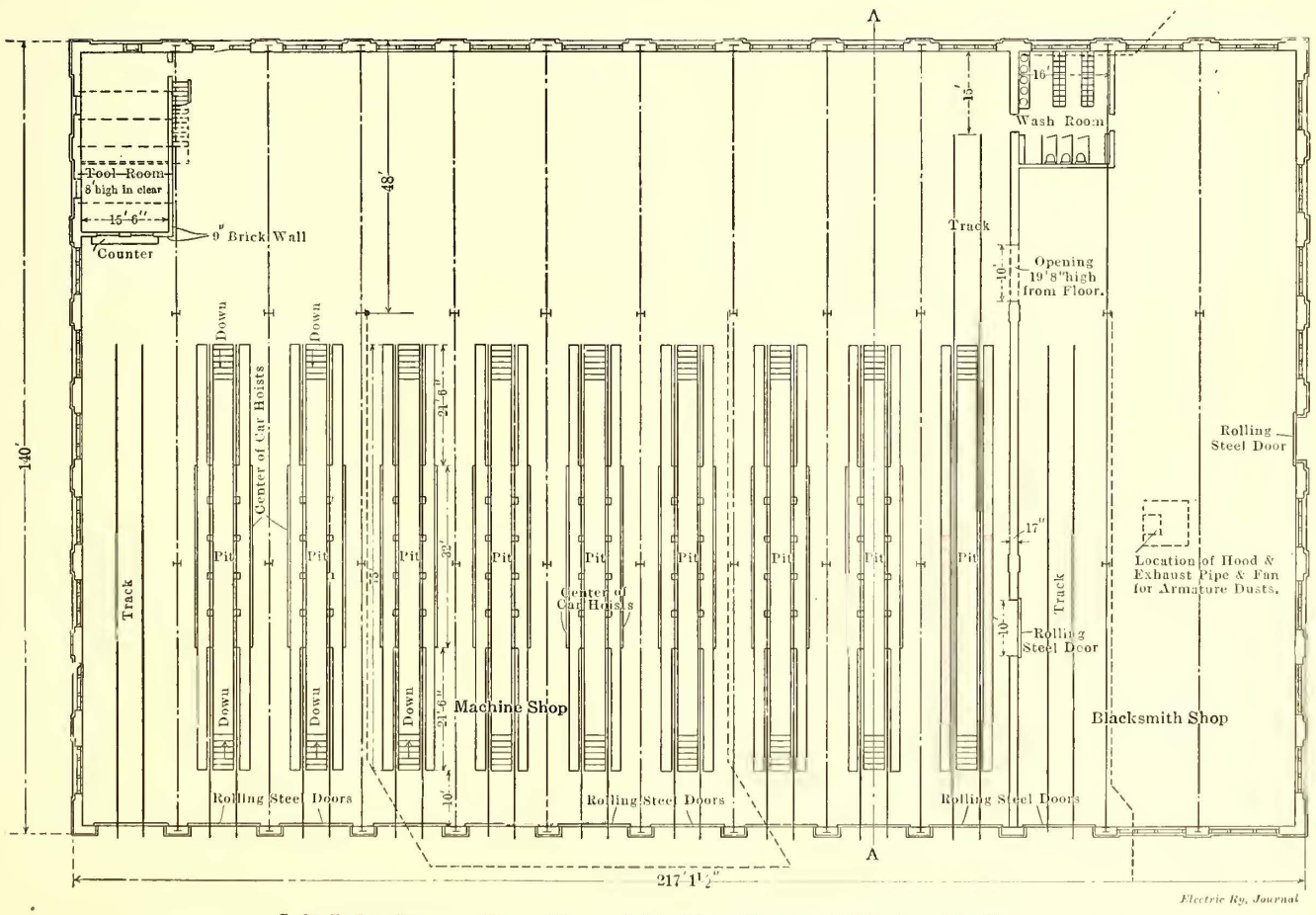
Salt Lake Shops—Transverse Section—Carpenter Shop, Paint Shop and Storehouse

A feature of this car house is the elaborate system of fire protection installed. For general protection purposes four sprinkler mains are run under the roof in each of the four bays, one directly over each track. There are also six lines of aisle sprinklers in each four-track bay, all supplied from a 50,000-gal. tank. The tracks at the west end of the car house are on grade, so that the cars can be run out by gravity if necessary. A low insurance rate has been obtained.

The storehouse has a gallery 16 ft. wide extending around all four sides, having a central court 15 ft. 11 in. high in the clear between floor and bottom of the roof trusses. In the southwest corner of the main floor, under the gallery, is partitioned off the storekeeper's office, 16 ft. square. In the northwest corner is the lineman's room, 16 ft. x 20 ft. The partition in each case is of metal lath with cement plaster. A basement 9 ft. 6 in. high under the floor shop is provided under the

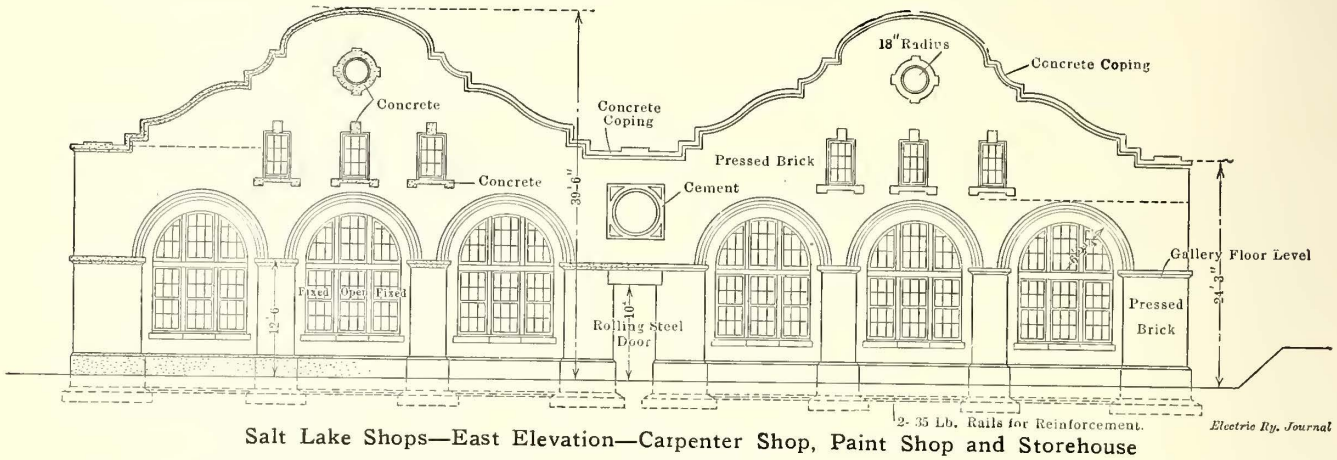


Salt Lake Shops—Main Floor Plan of Carpenter Shop, Paint Shop and Storehouse



Salt Lake Shops—Floor Plan of Machine Shop and Blacksmith Shop

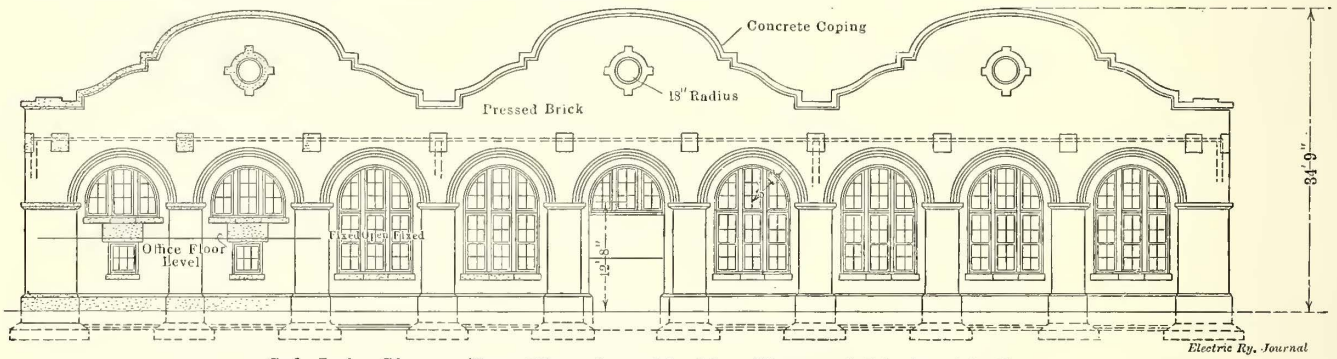
entire storehouse. All floors are of concrete and steel frame construction. Along the entire west side of the storehouse is an 8-ft. platform with concrete floor 3 ft. 9 in. above grade and level with the storehouse main floor. A track alongside the platform and also a wagon roadway permit ready unloading of supplies, while a runway to grade 5 ft. wide at the southwest corner of the building permits trucking of heavy stores from the storehouse. Entrance from the platform is afforded by two rolling steel doors 6 ft. 11 in. high and 10 ft. 6 in. wide.



Salt Lake Shops—East Elevation—Carpenter Shop, Paint Shop and Storehouse

An awning covered with metal Spanish tile covers the entire platform. As a protection from teams and trucking, the platform has a 4-in. x 4-in. angle-iron edge, and on the face of the platform wall, 22 in. above grade, is bolted an 8-in. x 10-in. fender. A freight elevator with platform 6 ft. x 8 ft. 6 in. serves the storehouse from basement to gallery. At the southeast corner of the storehouse are a counter and employees' entrance for dispensing stores and supplies.

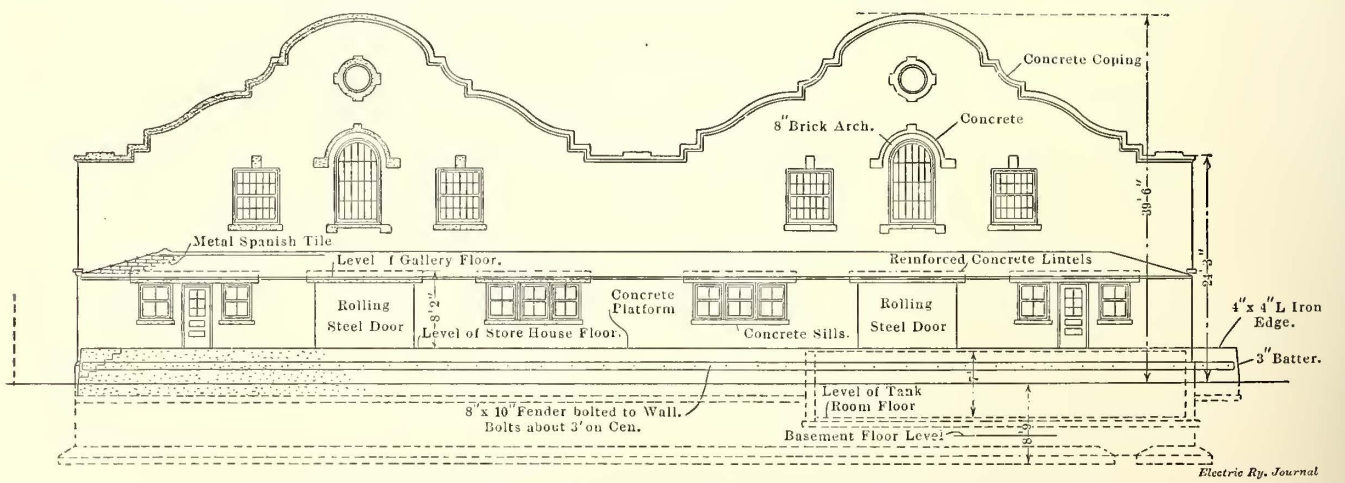
The carpenter and paint shops are each provided with tracks connecting at the south end with the transfer pit. The five tracks of the carpenter shop are carried only to the center of the shop, the remaining half of the room with a 28-ft. gallery over the northern end being left for woodworking machines, workbenches, etc. The four paint shop tracks are carried back 90 ft., each track having a wash rack grating installed in four removable sections 12 ft. 6 in. long. At the south end of each track is an 18-in. sand trap with drain to sewer. Across the northern end of the paint shop extends an 18-ft. gallery. Each track opening is 12 ft. 4½ in. wide x 19 ft. high and is protected by a Kinnear steel rolling door. Both carpenter and paint shops have concrete floors, their elevation being at grade or 3 ft. 9 in. below that of the storehouse.



Salt Lake Shops—East Elevation—Machine Shop and Blacksmith Shop

MACHINE AND BLACKSMITH SHOP

The machine and blacksmith shop building is 217 ft. 1½ in. long x 140 ft. wide. The western end, 51 ft. 3 in. x 140 ft., is given up to the blacksmith shop and foundry and has one

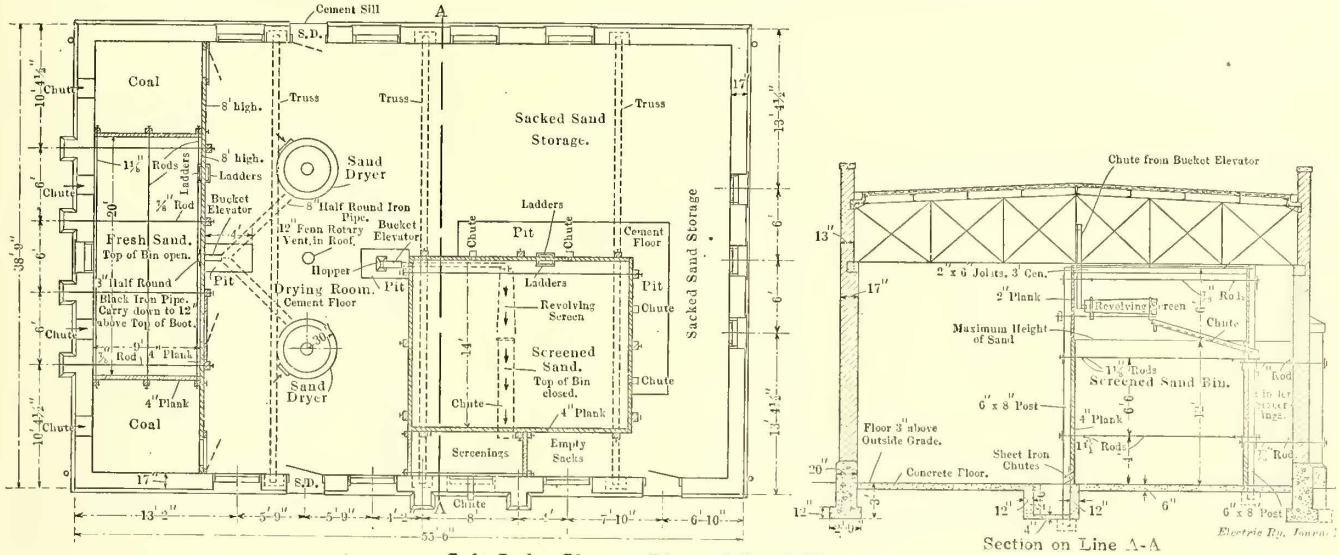


Salt Lake Shops—West Elevation—Carpenter Shop, Paint Shop and Storehouse

track extending back from the entrance a distance of 85 ft. Dividing this shop from the machine shop is a 17-in. brick fire wall, which has two 10-ft. openings, one being equipped with a rolling steel door. The machine shop is a single room 140 ft. x 165 ft. 10½ in. It has 10 tracks for the transfer pit, extend-

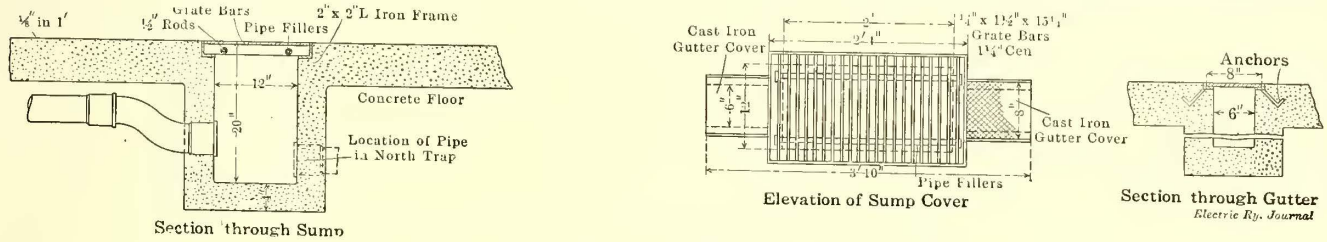
ing back a distance of 85 ft. from the entrances, with the exception of the one on the west end, which runs within 15 ft. of the rear wall. Nine of these tracks are provided with pits 75 ft. in length, eight of which have, midway between their ends, a 32-ft. car hoist. The hoisting members of the latter consist of

In the southeast corner of the machine shop is partitioned off a tool room 32 ft. long x 15 ft. 6 in. wide, an office for the master mechanic being located directly over. The entire southern side of the machine shop will be utilized for machine tools and machining operations.



Salt Lake Shops—Plan of Sand House

12-in. I-beams, 31½ lb. per foot, spaced 9 ft. 6 in. center to center. For the length of the hoists the space between pits is open, supports for the hoists being provided by 12-in. x 18-in.

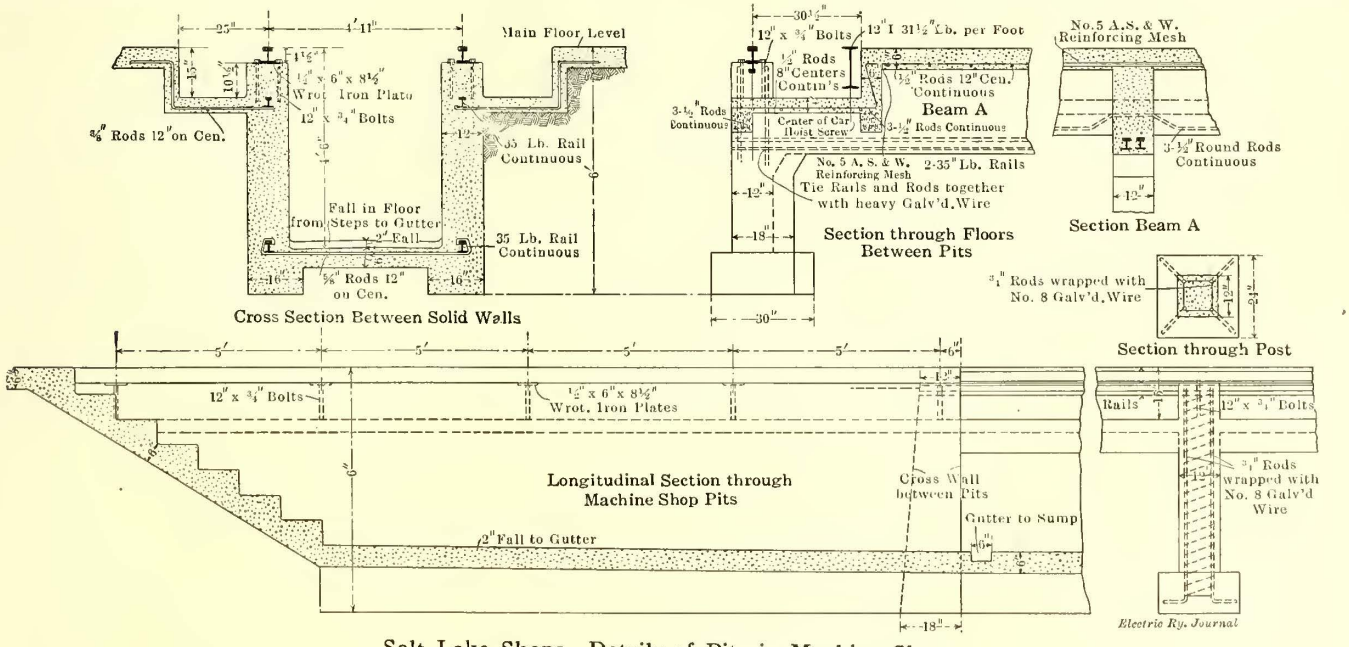


Salt Lake Shops—Details of Pits in Machine Shops

ARCHITECTURE

As in the case of the car house, the shop buildings are designed in the California Spanish Mission style. Red pressed brick is used for the exterior with concrete lintels, sills and copings. The roofs are of 3-in. concrete slab covered with magnesia roofing, and are supported on steel trusses, which

reinforced concrete posts and 30-in. x 12-in. cross beams, also of concrete. At the ends of the pits solid walls carry the track, the pits being 4 ft. 6 in. deep x 3 ft. 9 in. wide. Outside of



Salt Lake Shops—Details of Pits in Machine Shop

the tracks the pits are 21 in. wide x 15 in. deep. The floors of the pits drain to 6-in. gutters, which lead into a sump and sewer. A 6-in. concrete floor covers the entire machine shop.

divide the buildings into longitudinal bays, two in the case of the carpenter shop and three in the machine shop. In each building a clear height under the roof trusses of 19 ft. 8 in. is

provided. Special attention has been given in the case of the shops, as in the car house, to keeping the insurance risk down by providing fire walls, iron stairs, concrete floors and roofs, Kinnear steel rolling doors for all openings, metal lockers for the workmen, etc. The buildings are all heated from a central boiler house by means of a hot-water system built according to designs of Jesse C. Coogan, Milwaukee.

The company's monogram, cast in concrete, 6 ft. x 6 ft. in size, is set in the end walls of the buildings, adding to the general decorative treatment.

SAND HOUSE

Since the original plans for the car shops were drawn a very important addition has been made, consisting of a sand house, that is now nearing completion. This is located in a building by itself 55 ft. 6 in. long x 38 ft. 9 in. wide, located east of the machine shop and convenient to the car house. Fresh sand will be received at one end of the building in a 9-ft. x 20-ft. bin, from which it will be carried by means of a bucket elevator to two 8-in. half-round iron pipes that discharge into two 5-ft. diameter sand dryers located in the drying room. From the dryers the sand is fed by hand into a hopper and is taken by means of another bucket elevator to a chute which discharges into a revolving screen in the top of a 14-ft. x 18-ft. closed screened sand bin.

The revolving screen discharges the screenings onto a chute, from which they drop into a separate bin whence they can be removed outside the buildings by means of another chute A maximum height of 12 ft. is provided for the screened sand, so that a capacity of over 3000 cu. ft. is thus obtained. Sand is drawn from the bin by means of four chutes and is sacked and stored until needed. The storage for sacked sand will take care of over 6000 cu. ft.

EMERGENCY LIGHTING FOR INTERURBAN RAILWAY ROLLING STOCK

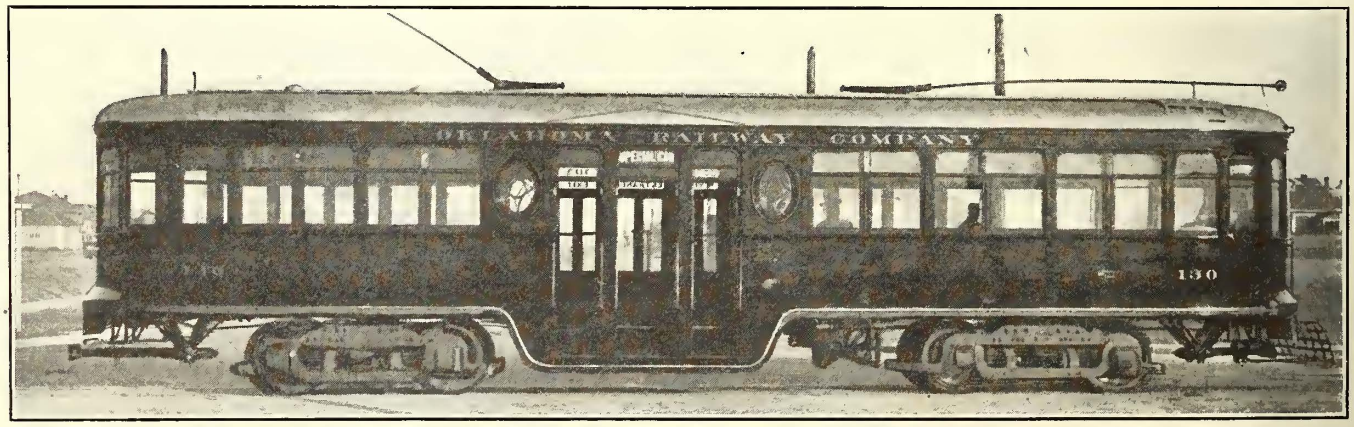
A point in the lighting of interurban railway cars which has received little attention is that of providing an emergency car-lighting service. It is decidedly annoying to have the entire car in darkness every time a gap in the third rail or overhead conductor is passed, when going over crossings and switches or through short tunnels in the daytime. A storage battery offers a very simple means of overcoming this trouble. The practice of one of the best high-speed lines in the East is to have one lamp in each of the five car clusters always in circuit with a storage battery. Even when the main-line current is cut off for an appreciable period, these battery lamps continue to burn, so that a car is never plunged into darkness. An emergency car-lighting system of this kind undoubtedly avoids many occasions for alarm on the part of nervous passengers. It can also prove very effective in minimizing the danger of an accident when, for one reason or another, the regular power supply has suffered interruption.

CENTER-VESTIBULE STEEL CARS FOR THE OKLAHOMA RAILWAY COMPANY

No better evidence could be presented of the rapid yet substantial growth of Oklahoma and the progressiveness of its electric traction companies than the decision of the Oklahoma Railway Company to use steel cars for its long-haul city and suburban service. The cars operated are of the prepay-

Center-Vestibule Car—End-On View of Car in Operation

ment center entrance and exit type and therefore no platforms are used. Ten of these cars have been constructed by the Niles Car Company in accordance with the design made by the engineering department of the Oklahoma Railway Company under the direction of W. A. Haller, former general manager. The first car of this type was placed in operation on Nov. 18 and proved an unqualified success as a prepayment car. The traveling public willingly co-operated in the introduction of the prepayment feature.

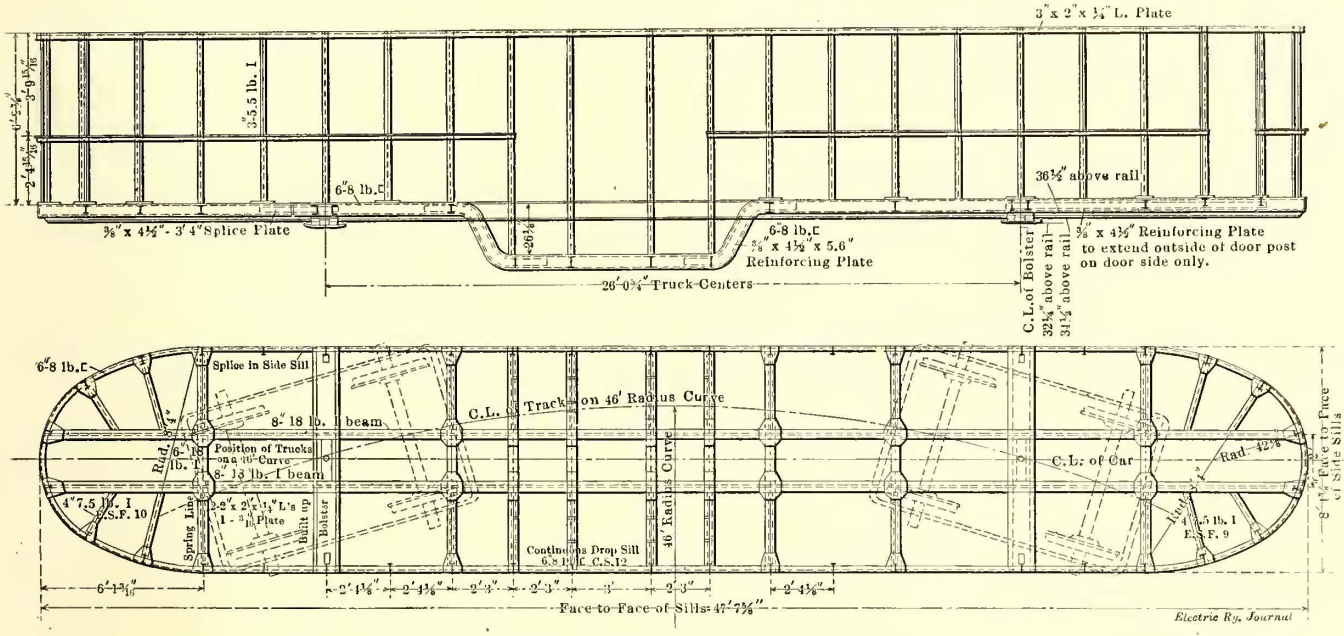


Center-Vestibule Car—Side View of One of the Ten Steel Passenger Cars Recently Placed in Service by the Oklahoma Railway

The principal purpose in adopting a steel car of this type was to attain the minimum dead weight per passenger consistent with strength. The latest gasoline-electric car built by the General Electric Company was considered so excellent an example of a light-weight design that it was used as a model with such modifications as were necessary to adapt it for use as a steel center-vestibule car for street railway service. The result is a car which, while seating 54 people, weighs only 53,000 lb., or 981 lb. per passenger. The value of this light weight is apparent from the designer's estimate that the sav-

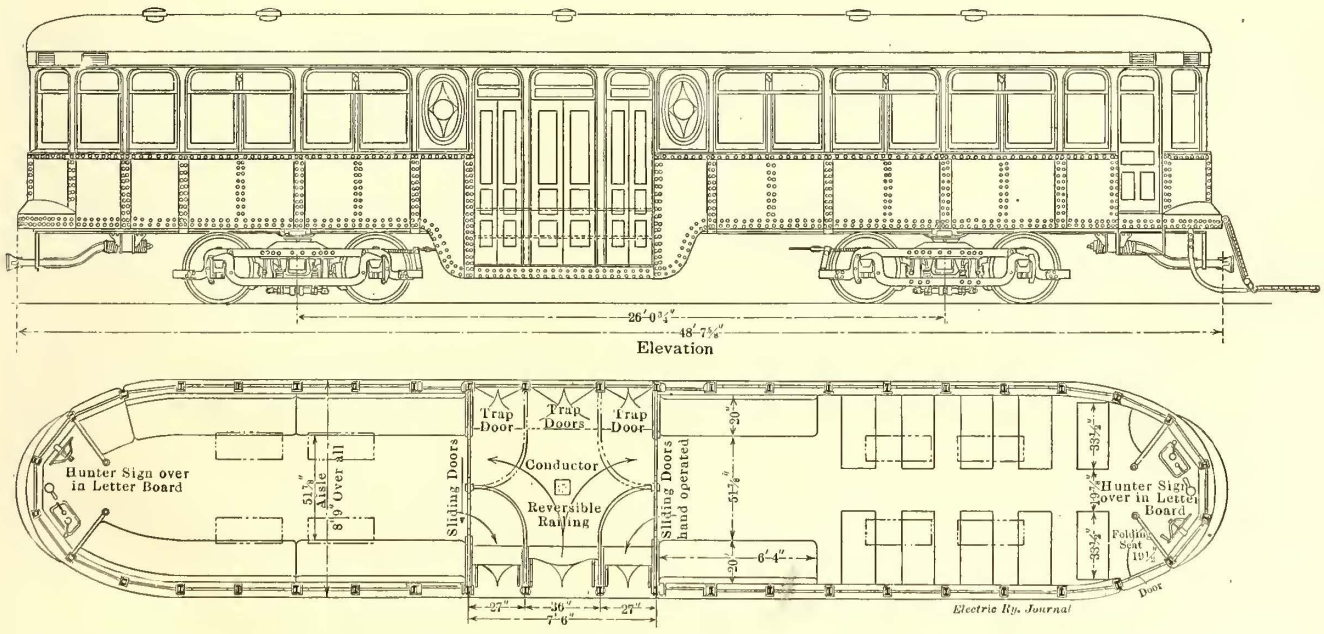
ing in power consumption over a standard wooden car will be nearly $500 a year. Thus, while the cars have cost approximately $7,000 each, or about $1,000 more than a wooden car, the power economy will soon offset the extra cost. Furthermore, as the car is stronger than one built of wood it should have a longer life, especially as the principal maintenance required will be merely the occasional painting of the framing and other parts subject to corrosion. It is believed that the use of the steel car is specially favorable for dry inland places like Oklahoma City.

The general features of the car are shown in the accompanying floor plan and elevation. It will be observed that there are no platforms and that the car is divided by a railed central area, 7 ft. 6 in. wide, with swinging door exits and entrances leading to a general passenger compartment on one end and a smoking compartment on the other end. The general compartment usually is the forward end of the car, although operation in either direction is possible. An emergency door is provided at one end for the use of the motorman. The plan shows that both transverse and longitudinal seats are used. The former seats are of mahogany with vertical square-spindle backs, and the latter seats are also of the slat type. The seat arrangements in both compartments give wide aisles and ample space opposite the doors.



Center-Vestibule Car—Side and Bottom Framing

When the car is in operation, passengers enter the 36-in. middle opening by ascending two 13⅜-in. steps and pass to the right or left after paying fare to the conductor. The latter is located in the middle of the vestibule as indicated. One duplex register is placed above the conductor, but there are no register rods or cords through the car proper.

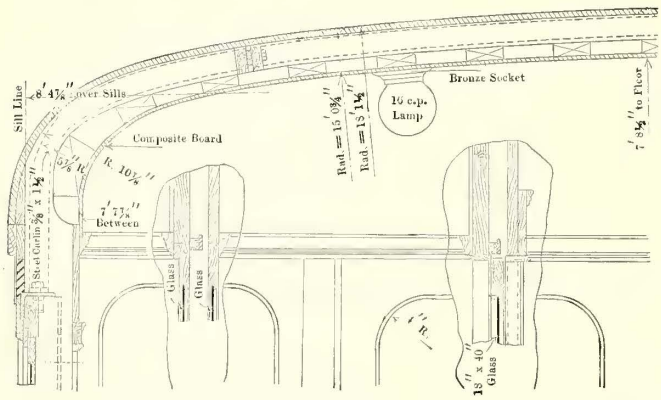


Center-Vestibule Car—Elevation and Plan, Showing Dimensions of All Exits and Entrances, Compartments, Etc.

The 27-in. exit doors located on each side of the entrance railings permit passengers to leave the car from the separate compartments without any confusion. This arrangement practically isolates the general and smoking compartments from each other and so insures the maximum comfort to both classes of passengers. The side entrance and exit doors are pneu-

matically opened and controlled separately by the conductor, who is in a position to see all that transpires while people are entering or leaving. The compartment sliding doors are operated by hand by the passengers. Dividing railings are also provided to isolate the motorman.

President A. H. Classen, Vice-president J. W. Shartel and A. J. Bemis, of J. G. White & Company, who is now manager of the company, are all favorably impressed with the design of this car. They believe that there is no question that this type will insure the collection of even a greater percentage of the



Center-Vestibule Car—Half-Section of Roof and Other Details

fares than a standard prepayment car with platforms, as it is simply impossible for passengers to ride anywhere except inside the car. One particular advantage over the platform prepayment cars is that the motorman can devote all his time to running the car, because he has no exit doors to operate. So far as the crew is concerned, the center-vestibule car is better than any full-vestibuled car, as it gives protection from the elements at all times. The only serious objection advanced is the problem of looking after the trolley. In this respect, however, the car is not at a much greater disadvantage than any platform car with closed vestibules.

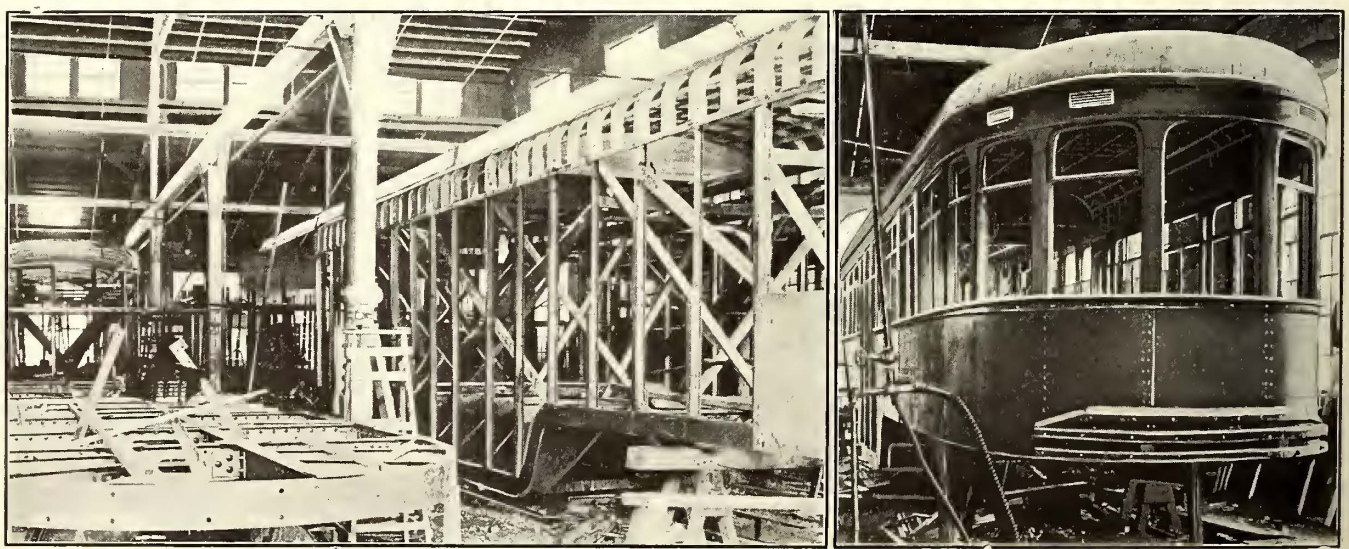
All of the steel used in the construction of these cars is composed of standard sections. The bottom framing comprises a continuous drop sill passing all the way around the car and built up of 6 in. 8 lb. channels; two continuous longitudinal sills consisting of 8-in. 18-lb. I-beams; floor beams made up of pairs of 2-in. x 2-in. x ¼-in. L's and 1 3/16-in. plate; short 4-in. 7.5-lb. I-beams from the longitudinal sills to the end sills, and two bolsters made up of L's and plates. The side framing is composed of 3-in. 5.5-lb. I-beams, which are spaced in most cases 2 ft. 3 in. or 2 ft. 4⅛ in. apart, but at the center the spacing is fully 3 ft. on account of the 27-in. entrance door. The sides of the car are sheathed with 1/16-in. steel and the ends with ⅛-in. steel. As shown on one of the detail drawings, the window frames and sash are of wood. The doors and bulkheads are also of wood. The roof, as illustrated in the sectional drawing, is designed to provide for a longitudinal air space, 6 in. high, between the composite board headlining and the roof. This chamber is in communication with louvers at each end of the car and has outlets at intervals throughout the car to secure the necessary air movement for ventilation in the regular passenger compartment, but the smoking room has Globe ventilators. The illuminated numbering and routing signs of the Hunter type are incorporated in the car construction. Edwards trap-doors cover the openings over the steps when the latter are not in use.

The principal dimensions of the cars are: Length over the buffers, 48 ft. 7⅝ in.; face to face of sills, 47 ft. 7⅝ in.; height over all, 8 ft. 9 in.; height from top of 6-in. continuous drop sill to top of side posts, 6 ft. 2⅞ in.; height from floor to center line of roof headlining, 7 ft. 8½ in. The body is mounted on two Standard C-50 trucks equipped with four Westinghouse No. 101-B 40-hp motors. Both air and hand brakes are installed.

RAILWAY POWER SUPPLY BY A MASSACHUSETTS CENTRAL STATION

Operating results for the past year at Greenfield, Mass., furnish evidence that an electric railway load is a desirable addition to the power business of a well-conducted central station. In this case the total power supply of the Connecticut Valley Street Railway Company is purchased from the local system of central-station service. The connected railway load is 980 kw; the connected industrial power load is 1313 kw, and the total connected load, including lighting services, 3406 kw. The total income of the Greenfield company for the year was $111,894, of which the railway company contributed $39,385 and industrial electric motor users $23,994. The railway company operated 47 miles of track and purchased 2,811,630 kw-hours for its service at a cost of 1.4 cents per kw-hour. Other power users paid 2.5 cents per kw-hour, and the average income of the central station per kw-hour sold was 2.72 cents.

The railway load thus accounted for 62 per cent of the central-station power income, and 35 per cent of the total earnings. Although the connected railway load was 29 per cent of the total, the demand for its service was spread through the day sufficiently to exert a powerful effect upon the load factor of the central station, which was 42.8 per cent for the year. The total generating capacity was 2850 kw.



Center-Vestibule Car—Steel Cars in Various Stages of Construction

DAYTON MEETING OF CENTRAL ELECTRIC RAILWAY ASSOCIATION

The Central Electric Railway Association held an interesting meeting at Dayton, Ohio, on Dec. 1. About 75 railway and supply men took part in the discussions of several papers, which were read according to the program presented in an earlier issue of this paper. During the noon recess John F. Ohmer, president of the Ohmer Fare Register Company, Dayton, Ohio, entertained at a luncheon all the railway and supply men attending the convention. Several prominent business men of Dayton welcomed the railway men.

NEW CONSTITUTION AND BY-LAWS

At the beginning of the morning session George H. Whysall, president of the association, announced the reading of the new constitution and by-laws of the Central Electric Railway Association and the Central Electric Traffic Association. These were read by A. L. Neereamer, secretary, and after a short discussion were adopted unanimously. In general the notable changes in the new articles were made so that the articles would conform to the improved methods of doing business which have been found desirable since the formation of the association in 1906. These new constitutions and by-laws combine more closely the work of the two associations and make the Traffic Association more dependent on the parent body. The territory of the Central Electric Railway Association was extended to include the Illinois roads and the new by-laws make it a simple procedure for the association at any meeting, by a two-thirds vote, to extend the "scope of the association so as to include any State or States, or parts thereof, in the Mississippi Valley." The constitution includes the following sections regarding membership:

"The membership in this association shall be divided into two classes, active and associate. The active membership shall consist, first, of interurban roads or city lines wholly or in part within the territory embraced by the organization, to be known as railroad members; second, persons engaged in or connected with railway supply business in all its branches, to be known as supply members. Associate members shall consist of officials of electric lines outside of the territory and officers of other like associations.

"Railroad members will be admitted upon executing and signing the articles of agreement for the maintenance of the association.

"To become a member, supply or associate, a candidate's name shall be proposed in writing to the executive committee by at least two members in good standing, at least two weeks previous to a regular meeting. All applications must be accompanied by the dues for the first calendar year. The fitness of the candidate for membership shall be considered by the executive committee and, if approved, shall be reported to the association at the next regular meeting. The name of the candidate shall be acted upon, unless withdrawn at said regular meeting, and election be by ballot, hand, or yea and nay vote, a majority electing as the meeting may determine."

The by-laws of the Central Electric Railway Association include the following regarding voting and dues:

"On matters pertaining strictly to railroad methods, or standards or rules, each railroad member is entitled to one vote, to be cast by the highest ranking officer present, supply, associate and honorary members not voting on these subjects. On all subjects except those mentioned in the preceding section all representatives of member companies, supply members and association members may exercise the right of franchise.

"The annual dues of railroad members shall be, for interurban railways, a sum equal to $1 per interurban mile operated, per annum, to cover their proportion of the expense of the said association. Further, that this agreement may be made to include city lines owned or operated by the line signing upon the basis of $1 per mile of city (single) track. For city lines depending upon gross receipts for railway operation the dues shall be upon the basis in the accompanying table.

"The annual dues for supply members shall be $8 for each calendar year and shall be payable at or before the annual meeting.

"The annual dues for associate members shall be $3 for each calendar year and shall be payable at or before the annual meeting."

The first section of the by-laws of the Traffic Association in part is as follows:

"The Central Electric Traffic Association is organized to comprise interurban roads, members of the Central Electric Railway Association, who have furnished the chairman of this association with the necessary power of attorney or authority for the filing of tariffs for or on behalf of their company.

MEMBERSHIP DUES OF CITY COMPANIES

Gross Receipts				Annual Dues
Under	$50,000			$10.00
Between	50,000	and	$100,000	12.50
"	100,000	and	250,000	25.00
"	250,000	and	500,000	37.50
"	500,000	and	1,000,000	50.00
"	1,000,000	and	2,000,000	75.00
Over	2,000,000			100.00

"Connecting railways and transportation companies not in the above-described territories may become members by a majority vote by all members of the association and by signing articles for the maintenance of the Central Electric Railway Association."

The new constitution and by-laws will be printed and distributed to member companies.

RAILWAY GUIDE AND MAP INSURANCE

The president reported that the executive committee, after a full discussion of the advisability of publishing an electric railway guide for the Central States, had appointed a committee to ascertain the best means for carrying out this work. He also stated that the executive committee had reconsidered the advisability of authorizing the secretary to publish a map of the Central Electric territory. As a result the executive committee had referred the matter to the Traffic Association committee with power to act.

The committee on insurance, it was stated, had met and resolved that the association should sanction the appointment of a consulting insurance engineer and expert, but definite action had been suspended pending the completion of a report on the same subject by the insurance committee of the American Electric Railway Association.

REMARKS OF MR. BRADY

Arthur W. Brady, president of the American Electric Railway Association, was invited to address the meeting. Mr. Brady, in acknowledging the compliment paid him in President Whysall's introduction, said that he regarded his election as president of the American Electric Railway Association as the result of an effort on the part of that association to give every section of the country equal representation in the executive affairs of the American Association. Mr. Brady then told of the successful convention at Atlantic City and spoke a few words in praise of the exhibit made by the Manufacturers' Association. He said the Central States were well represented at the meetings and that the sessions of the American Association had been particularly valuable. Mr. Brady then called special attention to the address of Patrick Calhoun, characterizing it as one of the strongest that had ever been presented before the association. He also called attention to the valuable papers read in executive session by Charles O. Kruger, president of the Philadelphia Rapid Transit Company, and Charles V. Weston, president of the South Side Elevated Railroad Company, Chicago. One of the most notable indications of the broadening scope and the advancement of the association was the recent accession of the Pennsylvania Railroad to the membership.

Mr. Brady pointed out that the work of the Central Electric Railway Association did not conflict with that of the American Electric Railway Association and its affiliated bodies. There was neither rivalry nor competition, except that which ought to exist in order to get the best results. The larger association

could do some things better than the smaller. There were likewise many problems which the small association should properly handle first. Such questions as that of insurance could best be handled by the larger association. Mr. Brady called attention to the excellent work which H. J. Davies, of the Cleveland Electric Railway, had done in furthering electric railway insurance matters and stated that Mr. Davies had again accepted the chairmanship of the insurance committee, for which the executives of the association were thankful. The insurance situation had been a difficult one to work out, but Mr. Brady hoped that the committee would find a good and satisfactory solution.

Another line of work which the American Association, or committees of the affiliated associations, would shortly take up would be that of attempting to obtain a reduction in the differential in price between "T" and girder rails. Some of the railway men thought that this differential was too high and it was hoped that the prices could be made more equitable. Mr. Brady concluded his remarks by urging non-member companies to join the American Association and individuals to take out associate memberships. He repeated that there was no rivalry between the two associations and said that during his presidency it would be his aim to do everything possible to further the good of the industry and also to assure co-operation and continued harmony between the American Association and the sectional associations.

President Whysall announced that the executive committee had decided that the next meeting, which would be the annual meeting, would be held at Indianapolis on Jan. 19.

RECENT DEVELOPMENTS IN CAR HEATING

The first paper of the meeting, by H. S. Williams, of the Peter Smith Car Heater Company, Detroit, entitled "Recent Developments in Car Heating," was then read. This paper was published in last week's issue on page 1105.

Mr. Whysall called attention to the extreme lightness of the hot-air heating equipment as compared with hot-water heaters and piping, and asked what provision had been made for heating a car if power were not available for operating the fan motor which normally distributed fresh warm air.

In reply Mr. Williams said that a damper had been provided at the top of the front side of the heater casing so that in the situation pointed out by Mr. Whysall the natural movement of the hot air past the fire box would give sufficient circulation to warm the car. A No. 2 heater, as described in the paper, weighed about 230 lb. complete. The heating company recommended the removal of the heaters in the summer in order to save the cost of power. With arched-roof cars, Mr. Williams stated, some vents in the roof were practically necessary. These outlets permitted the incoming fresh warm air to drive the foul air out of the top of the car. It had been shown that the best method of ventilating was to deliver the warm air at the floor and allow it to rise and the foul air to pass out at the upper level. If the ventilators in the monitor or arch roof were closed then the foul air would have to be forced out through the leakage openings. Thus additional work would be put on the circulating fan.

R. M. Hemming, general manager, Ohio & Southern Traction Company, stated that he had installed a hot-water system in his car houses so that the piping system on a car which was heated by hot water could be quickly filled with hot water and the car warmed early on its run. Mr. Hemming asked if the hot-air heating equipment included any device for automatically controlling the temperature of the car. Mr. Williams replied that it would be an easy matter to arrange such control, but experience so far had not proved it necessary and on account of the delicacy of thermostatic control it hardly would be practical for installation on a street car.

W. H. Evans, superintendent of motive power, Indiana Union Traction Company, inquired how hot-air distributing ducts were arranged to furnish heat to long, three-compartment interurban cars. Mr. Williams replied that it was customary to place the heater in the forward compartment and distribute the warm air to the other two compartments through a steel duct carried under the seats. The openings in this duct were graded in size so that a uniform amount of hot air could be distributed in each part of the car. Also, an opening in the side of the heater casing might be used to distribute warm air in the compartment in which the heater was installed. With the single duct extending the full length of the car and the graded openings it was possible to adjust the flow of air so that an equal number of heat units would be delivered through each duct opening in a given space of time. On the roads which had installed this type of heater no automatic regulation of the speed of the motor had been found necessary because of low voltage conditions. The dry air delivered into the car did not permit the window glass to become so frosty as when hot-water heat was used.

The efficiency of the hot-air heater, as stated by Mr. Williams, was from 25 per cent to 30 per cent higher than the hot-water heater in so far as the consumption of coal was concerned. The heater manufacturers recommended burning chestnut size anthracite coal. Coke would be found cheaper, but the experience had been that the crews did not give the heaters sufficient attention to assure as uniform firing results with coke as with hard coal. Hot-air heaters were much easier to regulate in mild weather than hot-water heaters, because the blower could be shut down and the fire be allowed to burn low, while with the hot-water heaters the heat-carrying medium must always be in circulation and the only way to lower the temperature of the car was by reducing the fire.

WOOD PRESERVATION

A paper on "Wood Preservation" was read by A. L. Kuehn, general superintendent of the American Creosoting Company, Chicago. This paper was published in last week's issue on page 1107.

Mr. Kuehn stated that the brush treatment of timber was not satisfactory unless it was known that the wood was thoroughly dry and free from spores. If improperly seasoned timber were given a brush treatment the moisture and wood-destroying fungi within the timber would be inclosed by the applied material, and this condition was the best for the rapid growth and propagation of the wood-destroying bodies. When questioned as to the most accurate method for determining the amount of preservative applied to timber, Mr. Kuehn said that for seasoned wood the method of weighing before and after treatment was the most accurate. However, the measurement of the preservative in tanks before and after the treating process, as performed at a plant under his observation, checked within one-fourth of 1 per cent.

In reply to a question asked by E. F. Schneider, general manager, Cleveland, Southwestern & Columbus Railway, Mr. Kuehn stated that chestnut wood did not decay as rapidly as many others, but that this wood was being treated. One of his plants had just treated 50,000 chestnut ties. Considerable care was required in treating chestnut wood under the vacuum process, because the wood burst very easily. Mr. Kuehn did not believe it positively economical to treat chestnut track ties unless tie plates were used to protect the wood against rail wear. In other words, it was not a question of timber, so far as preservation was concerned. Beech ties, Mr. Kuehn said, admitted of most successful results under treatment. In France treated beech ties last from 40 to 50 years. In this country, without treating, beech ties had a life of only four or five years, while some ties that had been treated were now as good as new after eight years of service and should last 25 years.

H. A. Nicholl, general manager, Indiana Union Traction Company, inquired regarding the balance in economy between purchasing white oak ties and purchasing treated red oak ties. Mr. Kuehn said that the steam railroads credited white oak ties with a life of from seven to eight years. The Big Four had begun creosoting track ties extensively about seven years ago. At that time white oak ties cost 65 cents to 70 cents apiece and the red oak cost enough less to admit of being treated and still cost not more than white oak. Thus, if the creosoted red oak tie should last no longer than the white oak tie the same economy was obtained. The life of a red oak tie depended on

the amount of preservative material applied and such ties should last from 15 to 20 years, provided they were not injured by rail wear. Since the general application of tie preservative methods the life of the white and red oak ties had increased, while the cost of preservation was practically the same. Roughly, the cost of creosoting a red oak tie was 20 cents. Mr. Kuehn said that if enough additional life could be obtained from a red oak tie to save the cost of renewal then treatment would be worth while as contrasted with the first purchase cost of white oak. If the life of red oak ties were doubled then the first cost would be twice as much as white oak and still the railroad company would save the cost of one tie renewal, which would more than balance the interest cost on the added first investment.

TRAFFIC

W. O. Woodard, traffic manager, Chicago, Lake Shore & South Bend Railway, presented a paper on "Traffic," which will be found in last week's issue of this paper, page 1109. In opening the discussion on this paper F. D. Norviel, general passenger and freight agent, Indiana Union Traction Company, stated that one of the elemental principles in building up traffic was to take good care of all parties, especially the first time they were handled; then the work of traffic solicitation would be greatly reduced. Mr. Norviel mentioned the Indiana Union Traction magazine, which was described in the convention souvenir issue of this paper. He stated that corrected timetables of the local road and connecting roads were published in this magazine. All excursion business was personally solicited and it was the practice to have some member of the traffic department accompany all special parties so that their wants might be fully satisfied. Recently the Indiana Union Traction Company had distributed 3000 maps of the City of Indianapolis to all the teachers in the railroad company's territory. These maps announced a teachers' convention and the service which the railroad company offered to and from Indianapolis. Mr. Norviel closed his remarks by saying that advertising was the life of the railroad business just as it was necessary for the success of any commercial undertaking.

A. D. B. Van Zandt, publicity agent, Detroit United Railway, said that it would be difficult for a road to spend too much money in advertising. He agreed with the previous speaker and others that extensive advertisement of changes in schedules was very necessary. The Detroit lines advertised in about 100 newspapers located in the immediate territory of the different divisions and the advertising space in the cars was used extensively. If a change of schedule was to be made it was fully advertised for a considerable length of time previous to its inauguration. Changes in schedules were made on Tuesday so that the readers of the country papers published at the last of the week would have ample time to see the announcements. Regarding theater service, Mr. Van Zandt said that as the result of continued advertising it was quite generally known throughout the territory that the last outgoing car on each division would wait until the theater had closed. These cars ran about 40 miles out of Detroit in each of four directions. The theaters usually displayed advertising matter in the towns to which this service was given. Mr. Van Zandt said that he had considered the installation of big bulletin boards in all stations on which the theater advertisements could be posted.

W. S. Whitney, general freight and passenger agent, Ohio Electric Railway, had been interested in that part of Mr. Woodard's paper describing the handling of excursion parties in trains up to 11 cars in length. Mr. Whitney said that he had been handicapped when competing with steam roads because the Ohio Electric Railway operated largely with single cars and the steam roads' traffic solicitors would offer to handle a large excursion party on one train.

O. H. Murlin, general freight agent, Dayton & Troy Electric Railway, said that his company had erected racks in each station in which standard sized theater advertisements could easily be inserted. This road took particular care to fully advertise all changes in schedules. During the past summer the Dayton & Troy had begun operating its cars in trains and this brought probably the greatest improvement in traffic conditions. All special business could be handled without extra cars and without deranging schedules. During the fall on the occasion of a celebration this 30-mile road averaged earnings of $100 per mile of track for one day.

E. F. Schneider, general manager, Cleveland, Southwestern & Columbus Railway, said that the best theater advertising which his company did was to run a "theater limited," which always left Cleveland at 11:15 p. m. and ran through to Elyria without stop. This train was very well patronized.

Mr. Murlin said that his company did not carry any advertisements except its own in its passenger cars. Whenever the promotors of a celebration desired a donation the railway company, instead of giving cash, offered to print from 10,000 to 12,000 dodgers and distribute them along the route, thus giving assistance to the celebration and encouraging traffic.

RAILWAY MOTOR GEAR AND PINION TEETH

A paper by T. W. Williams, General Electric Company, on the "Wear of Railway Motor Gear and Pinion Teeth" was next read by the author. This paper was published last week on page 1103. The mechanical officers of several roads at the beginning of the discussion called attention to the great improvement which had been made in gear material during the last few years. One engineer pointed out that the width of the gear face had increased less than 1 in. while the gears now transmit four or five times as much load as in the earlier days. The marked progress in gear construction, one man thought, had been forced upon the manufacturers by the repeated demands of the railways. W. H. Evans believed that one reason why such good success had been obtained with hard gears as compared with soft gears was because the wear of the hard gear did not increase so rapidly after the teeth had begun to lose their original shape. Lubrication of gears in track service, Mr. Evans said, should be carried on in the same way as the lubrication of any other machine. A little lubricant at the proper time and in the proper place was sufficient. He did not believe it was good policy to carry around a large amount of lubricant in the gear cases.

C. E. Sawtelle, Tool Steel Gear & Pinion Company, mentioned the experimental work which his company had done before it had placed hard gears on the market. He stated that the use of a hard pinion with a soft gear added from 25 per cent to 50 per cent to the life of the gear with not much added wear to the pinion, although the abrasion of the softer gear metal formed a grit which increased the wear markedly over that when both gear and pinion were hardened.

H. H. Buckman, Louisville & Southern Indiana Traction Company, stated that it was his practice to use 1 lb. of lubricant per month for each gear. This was a stiff grease and the small amount had been found ample. J. V. Smith, Indian Refining Company, stated that on investigation of the lubricating practice of a great many roads he had found during the last year a wide variation in the methods of lubricating gears and in the stiffness of the lubricant thought best. He would recommend a mixture of grease and sawdust.

When questioned regarding the reduction in costs to be obtained by using hard gears Mr. Sawtelle replied that no general average could be given, but the pinions manufactured by his company should have five times the life of untreated pinions. The price of treated pinions was a little more than double that for untreated pinions, the figures being $5 as compared with $2.10. As yet none of the treated gears had been worn out, so that their life could not definitely be stated. The point to be remembered was that with treated gears and pinions the cost for renewals was greatly reduced. Mr. Buckman called attention to the additional feature in favor of hardened gears, which were slowly, namely, that the chattering and jarring of the motor parts was greatly reduced and thus the life of the motor was increased.

GENERAL BUSINESS

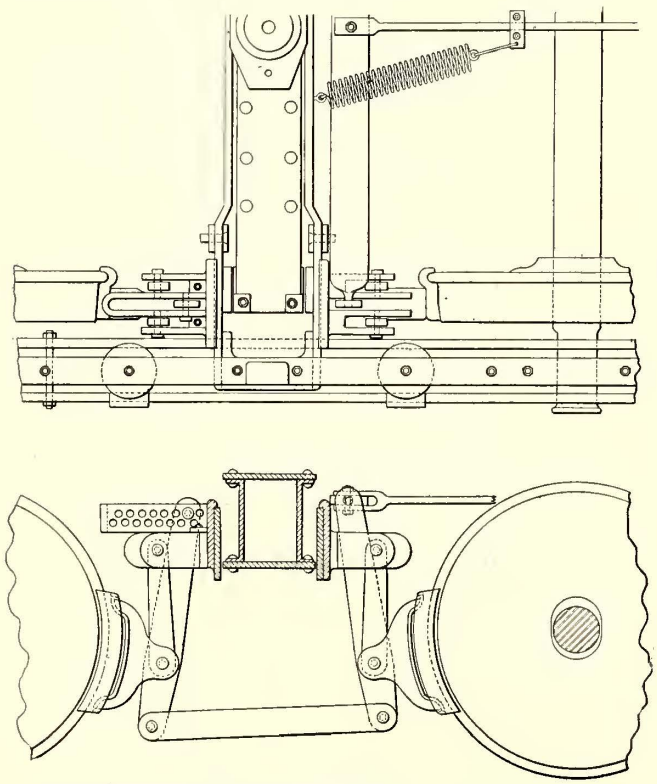
Mr. Buckman, also, speaking as chairman of the standardization committee, stated that the committee had in mind studying

the merits of devices which would prevent the overriding of cars and also looking into the possibilities of standardizing air-brake rigging. The commttee would like to have the ideas of the mechanical departments of the different roads on these two subjects.

Before adjournment President Whysall appointed the following committee on nominations to report at the annual election of the Central Electric Railway Association, which will be held at the Indianapolis meeting on Jan. 19: F. D. Carpenter, general manager, Western Ohio Railroad; J. H. Crall, general passenger and freight agent, Terre Haute, Indianapolis & Eastern Traction Company; W. S. Whitney, general freight and passenger agent, Ohio Electric Railway; F. W. Brown, general freight and passenger agent, Michigan United Railways; M. J. Insull, general manager, Louisville & Northern Railway & Lighting Company.

IMPROVED TRUCK BRAKE RIGGING

The shop forces of the Chicago, South Bend & Northern Indiana Railway, South Bend, Ind., have rebuilt the brake rigging on eight double-truck cars equipped with St. Louis No. 23-A, M.C.B. type trucks and have introduced several features which are said to improve the braking action and simplify maintenance and adjustment of the parts. The improved rigging does away with radius bars, offset brake levers and heads and is so designed that the slack can be taken up on the road without the use of any tools.



Improved Brake Rigging for M. C. B. Type Trucks

The truck brake rod extends under the center of the car body and is attached by a clevis and pin to the center of a brake beam connecting the top ends of the two live levers. This brake beam is a 1-in. x 4-in. flat bar reduced at the ends to 1¼ in. in diameter. A release spring with one end fastened to the truck transom is clamped to the brake rod. The live levers are made of ⅞-in. x 3-in. bars 28 in. long and the bottom truck connections are made of two bars 2 in. x ⅝ in., bolted together with washers 15/16 in. thick inserted between the bars. Special cast-iron brackets which are bolted to the truck transoms support the brake hangers and serve as guides for the live and dead levers to prevent the side displacement of the levers when the truck is on a curve. A single pin extends through the brake head to connect the links, levers and heads. A slack fork is bolted to the top of each bracket which guides the dead lever. The slack forks are made of forged metal and are provided with 16 pairs of staggered holes. A pin is placed through one pair of these holes to support the upper end of the dead lever, and by moving this pin it is possible to adjust the brakes. This is done by shoving the dead lever away from the transom until the shoes are close to the wheels and then placing the pin through the nearest holes. These slack forks are placed only on the dead-lever side of the truck. The cast-iron brackets which carry the brake hangers and serve as guides for the top ends of the live levers are interchangeable.

Some of the advantages which have been realized since this form of brake rigging has been used in South Bend during the past year are: Ease of adjustment, it being possible to take up the wear on the brake shoes on the street without the use of tools; simplicity of construction, all parts being duplicates for opposite sides of trucks and practically all parts being standard for all four corners of trucks; elimination of radius bars, offset shoe heads and levers; simple and direct release mechanism. A rigging similar in principle has been applied to Brill No. 27-E and the same adjustments to McGuire No. 39 trucks.

CITY ELECTRIC RAILWAYS AND THEIR RELATIONS TO THE PUBLIC

In a luncheon talk before the Chicago Engineers' Club, Nov. 30, Charles V. Weston, president of the South Side Elevated Railroad Company, of Chicago, discussed the relations of the public with surface and elevated electric railways in cities. For comparison he described intramural transportation 25 years ago when slow, dirty horse cars were in use, and contrasted these with the present high-speed, sanitary, well-lighted electric cars in which the same 5-cent piece purchases a ride. Meanwhile the costs of labor, materials, supplies, etc., have risen more than one-third, the lines have been extended for miles into suburban areas, involving longer hauls, and the equipment has grown heavier, necessitating more expensive apparatus throughout the system. In all of this the citizen has been the gainer, being enabled to live at a greater distance from the center of employment amid more pleasing and healthful surroundings, while his time of travel to and fro has been greatly diminished. Indeed, said Mr. Weston, if each of the 10,000,000,000 people who rode on the street car systems of the country during the period 1907 to 1909 has saved 10 minutes each ride at an equivalent wage of 15 cents per hour, the economic saving would be $238,000,000; more than 2½ times the entire income of the companies carrying this traffic. The average haul in Chicago is 6 miles per passenger for the elevated roads, and slightly less for the surface lines. Mr. Weston said that there was nothing that his audience could buy which would return to them so large a value as that which they received for the 5-cent piece spent for city transportation. The city street car ride brought the place of employment of tens of thousands of people close to their homes in the suburbs and outlying sections of the city. Mr. Weston recited the results of the Boston investigation of the division of a 5-cent fare, and declared that approximately the same proportion would hold in any other large city in America.

As proof of the extending influence of electric railways on the distribution of Chicago's population, Mr. Weston cited the assessor's figures for the valuation of property in the Hyde Park South Side section of Chicago during certain years. In the year of the cable car system, 1882, this figure was $7,580,000; in 1890, $16,000,000; in 1900, $26.000,000, and in 1909, $78,611,000. This particular region has always had steam suburban railway service, but it was the coming of the electric lines which contributed to its growth so enormously, as the dates

show. The electric railways are cutting into the steam roads' traffic, for the former, both surface and elevated lines, offer more frequent service at relatively high speeds for short distances, and deliver passengers virtually at the doors of their places of employment.

The elevated railways of Chicago represent an investment of $100,000,000 and the surface lines $107,000,000. Thus the industry locally means a physical property of more than $200,000,000, with its accompanying enormous redistributing power in the salaries of thousands of employees, and in the large amounts spent for maintenance and renewals. This beneficent aspect of electric railways in promoting business prosperity is in addition to their important services in opening up vast suburban areas for habitation by city people, who are served with rapid, comfortable rides at minimum cost. An important fact to be remembered was that the Chicago electric transportation systems paid taxes on $200,000,000 worth of property, which were of direct benefit to the citizens.

Mr. Weston spoke of the sometimes unpleasant attitude in which the public views corporation affairs. Although the risk to investors is hazardous in view of the diminishing returns on capital, caused by the rise of the prices of labor and material, yet it was plain that the public had gained vastly more from modern transportation systems than have the owners of these systems. The solution of this acute situation, he said, lies with the people in the granting of franchises which shall be fair to both themselves and the companies. Modern economists admit the natural monopolistic nature of street railway service, most of them agreeing that such service can be more economically rendered on a non-competing basis, but under legalized control and regulation. Mr. Weston, therefore, advocated the granting of franchises in which the passenger rate should not be stipulated as in the past, but instead the capital invested should be limited to the legitimate costs of the property and should be assured a fair return thereon, the fare being adjusted as the varying conditions of length of haul and density of population require. The return on the investment should be made proportional also to the hazard involved and should be sufficient to attract capital. Where service is demanded in sparsely populated districts, part of the cost of building the lines should be assessed against the region benefited, as is already being done in New York State.

Such a franchise, assuring to investors a reasonable return on their capital, would react not only to render electric railway and public service corporation securities more stable and secure, but would benefit the employees, providing them with more adequate remuneration and working conditions, and, in the end, the general public, through maintaining and operating the property at its highest efficiency, keeping its equipment apace with the art. By placing before the public the exact truth about the cost of operation, its co-operation could be secured in the granting of fair franchises. Mr. Weston does not believe in the municipality sharing the profits of operation, declaring that adequate service for patrons is all that should be expected or asked from public service companies. In closing Mr. Weston said:

"Some day in the not distant future the people of this community will be brought face to face with this question—and you, as citizens, will be asked to assist in solving the problem in a right manner. The rehabilitation ordinances recently passed in this city do not solve the whole problem; they mark only a small step in advance in that they provide for the integrity of the investment, but in all other respects they are much the same as ordinances found elsewhere."

An American consul in Latin-America reports that an English company is about to obtain a concession for the establishment of electric light, power and tramway systems in and about his city. This company also contemplates electrifying a railway which extends about 225 miles. The name of the official to whom correspondence should be sent can be secured under File No. 5799, Bureau of Manufactures, Washington, D. C.

REPORT OF COMMITTEE ON TRAFFIC AND TARIFFS*

BY J. M. CAMPBELL, CHAIRMAN; B. E. WILSON, SECRETARY; C. H. ARMATAGE, H. C. ALLEN, J. W. NUGENT, R. M. COLT, C. R. GOWEN

To date three meetings have been held by this committee, one at Cooperstown, June 29, immediately after the appointment of the committee, one in the hearing room of the Public Service Commission at Albany, Sept. 28, and the last at the Onondaga Hotel, Syracuse, Nov. 26.

At the Cooperstown meeting it was arranged to have a circular sent to all companies operating in that part of New York State which is subject to the jurisdiction of the Public Service Commission, Second District, to ascertain from the different companies their views of the committee. This circular also solicited the co-operation of these companies in the work to be taken up by the committee, the first object of which was to draft plans whereby all companies could attain more uniformity in the tariffs filed by them with the Public Service Commission. Favorable replies were received from a majority of the companies, heartily offering their support in the work outlined by the committee.

At the meeting held in Albany Commissioner M. S. Decker, of the Public Service Commission, was introduced by W. E. Griggs, chief of the tariff bureau, Public Service Commission. Mr. Decker gave many verbal suggestions to the committee on its work. He believed that the only correct or ideal fare tariff was one that would allow the passenger the same basis of fare from crossroads or intermediate stops as is given to passengers from local ticket-selling points. He stated that he did not consider it an injustice to the public to charge an excess fare at the crossroads or intermediate stops provided that the excess fare was shown by a receipt ticket which would be redeemable at any ticket agency. Mr. Decker said there was some feeling against the excess fare arrangement, but he realized its importance in the auditing end of the transportation business. He recommended that a redemption limit of three months or 90 days be placed on the excess fare receipts. Mr. Decker concluded with an assurance to the committee that it would have his assistance in any specific matters which it might wish to take up with him.

The following subjects were then taken up informally by the committee, the idea being to discuss them individually at future meetings:

Interchange with steam roads.

Tariff rulings regarding transportation of corpses, dogs, baggage, children.

School transportation, chartered cars, excursions.

At this second meeting the committee met with considerable difficulty in its work in not being able to determine properly the relation of Chapter 49 of the consolidated laws, an act relating to railways, Section 57, and the companies which they were representing. It was thereupon decided that this section of the law should be referred to the legal committee of the association for interpretation and instruction.

At the meeting held in Syracuse uniform rulings covering the transportation of the following subjects were taken up:

Chartered cars, commutation tickets, school commutation, newspapers, together with several other important subjects involved in building tariffs.

The committee feels that sufficient progress has been made in the work to permit it to prepare and present tentative sample tariffs to the association. It respectfully requests an appropriation of at least $200, to cover the printing of the tariffs and other incidental expenses that are likely to be incurred in the work. It is the intention of the committee to send copies of the tentative tariffs to the various interested companies, the purpose being to solicit criticism and recommendations in perfecting what it has in mind, namely, a so-called sample uniform tariff.

*A report presented at the quarterly meeting of the Street Railway Association of the State of New York held at Syracuse, N. Y., Dec. 7, 1910.

SYNOPSIS OF REPORT OF THE COMMITTEE ON WAY MATTERS OF THE AMERICAN ELECTRIC RAILWAY ENGINEERING ASSOCIATION FOR THE YEAR 1909-1910*

BY M. J. FRENCH, ENGINEER MAINTENANCE OF WAY, UTICA & MOHAWK VALLEY RAILWAY

The executive committee of the American Electric Railway Association having recommended certain subjects for consideration by the committee on way matters, each member was assigned a subject on which to prepare a report. These reports were presented, discussed and amended at meetings of the committee to which were invited engineers and specialists in the employ of manufacturers whose products were concerned in the reports.

The preparation of "Specifications for Open-Hearth Steel Rails," assigned to J. M. Larned, engineer of maintenance of way of the Pittsburgh Railways, was the result of exhaustive discussion between the members of the committee, representatives of the steel companies supplying open-hearth rails and representatives of firms making a business of inspecting, analyzing and reporting upon structural materials. That part of the specifications relating to chemical composition was the subject of considerable discussion, the manufacturers wishing to keep the carbon content as low as possible to avoid brittle rails, while committee members wished a higher percentage in order to give harder rails and better wearing qualities. After discussion in the convention it was decided to adopt the percentages given in the table that follows:

	Lower Limit.	Desired Composition.	Upper Limit.
Carbon	0.60 per cent	0.68 per cent	0.75 per cent
Manganese	0.60 per cent	0.80 per cent	0.90 per cent
Silicon (not to exceed)			0.20 per cent
Phosphorus (not to exceed)			0.04 per cent

The following note was appended: An increase of 0.035 per cent carbon above the upper limit of this specification will be permitted for a decrease of each 0.01 per cent of phosphorus below 0.04 per cent. Under this note the consumer can require not more than 0.02 per cent phosphorus and thus raise the desired composition of carbon to 0.75 per cent and the upper limit to 0.82 per cent. It was deemed advisable by the convention to practice moderation and give rails of the above composition a thorough test rather than go to extremes.

Another important feature of the specifications is the adoption of the standard drop-testing machine as recommended by the American Railway Engineering & Maintenance of Way Association, thus joining with that society in standardizing this piece of apparatus. These specifications were referred to the committee on standards with the recommendation that they be adopted as standard practice.

The report on the "Standardization of Girder Rails," submitted by E. O. Ackerman, chairman of the committee, called attention to the unwarranted expense to manufacturers and thus to consumers resulting from the great and ever-increasing number of girder rail sections required to be kept on hand and from the capital invested in the rolls. The report called attention to the correct principles embodied in the design of the sections recommended by the way committees of 1907 and 1909. These rails consist of 137-lb. and 122-lb. 9-in. half-Trilby rails and 122-lb. and 98-lb. 7-in. half-Trilby rails. The report states that: "In these sections a minimum amount of rail movement is secured by placing the web well under the head of the rail, and the groove, which is deep and wide, will permit a large amount of wear from the head of the rail before the wheel flange will come in contact with the lip of the rail and thereby cause an increase of power consumption and rail wear. The rail section being made co-axial with the wheel loading, an equal amount of strain is thrown on each of the two splice bars and thus the life of the mechanical joint is increased."

The discussion of the use of these sections brought out the fact that some of the larger systems were using modified types of these rails designed to reduce the weight where it could best be spared; that is in width of the base and size of the projection forming the half groove. Cuts of these modified rails consisting of 7-in. and 9-in. half-groove girder rails and 7-in. and 9-in. girder guard rails were submitted with the report. The committee on standards, in its report to the 1910 convention, recommended the adoption of the heavy girder rails submitted in the 1909 report as "recommended practice," but at a meeting of the executive committee of the Engineering Association held in New York on Nov. 15, 1910, that committee passed a motion to omit from the letter ballot under which standards and recommended practice are finally determined all reference to girder rails. This leaves open for the new committee on way matters the entire field of girder rail design.

The discussion of the convention brought out the point that there should be a 7-in. girder guard rail and a 7-in. girder tram rail that will fish with the 7-in. half Trilby rails, and also that there should be a 9-in. girder guard rail and a 9-in. girder tram rail that will fish with the 9-in. half-Trilby rails. The guard rails were considered necessary for special work adjoining the new straight rails already recommended, and the tram rails are required to fulfil franchise conditions. If it is possible to design these new rails so that one design of joint plates will fit all of the 7-in. rails and one pair will fit all of the 9-in. rails without requiring combination joints a great expense will be saved in future track construction. The design of these new rails will be undertaken by the new committee on way matters.

A motion was carried requesting the committee on standards to recommend for adoption as standard practice the various T-rails recommended to the 1909 convention. These are the Series A and Series B T-rails of 80 lb., 90 lb. and 100 lb. weight per yard, adopted by the American Railway Association; the 7-in. T-rail designated as Section A in the 1909 report, having 6-in. base, 1 7-32-in. web, head 2¾ in. wide and 1 11-16 in. deep and weighing about 108 lb. per yard; also the 7-in. T-rail designated as Section B in the 1909 report, having 6-in. base, 7-16-in. web, head 2½ in. wide and 1 9-32 in. deep, weighing 80 lb. per yard and being identical with Lorain Steel Company section No. 335 and Pennsylvania Steel Company section No. 277. These recommendations relating to T-rails were later approved by the convention in considering the recommendations of the committee on standards, and the executive committee voted on Nov. 15 to incorporate in the letter ballot the recommendations that these T-rails be adopted as "recommended practice."

A set of rules for determining gage of track and widths of flangeways on curves was presented and recommended for adoption by the committee on standards as standard practice. By these rules the proper gage and flangeway widths may be found to suit all conditions of wheels, wheel bases, truck centers and curve radii.

The perplexing problem of the rail joint was presented in a comprehensive paper written by George Weston, assistant chief engineer, Board of Supervising Engineers, Chicago Traction. Mr. Weston covered the field of experience with regular bolted joints, special riveted and machine-fitted or driven bolts, and cast-welded, thermit-welded and electrically-welded joints. Considerable discussion resulted from this paper, and explanations in greater detail were given by the engineers who have been applying the special forms of joints and welds recently developed. It was deemed inadvisable to recommend any particular type of joint at the present time, as the later types have not been sufficiently tested. The consensus of opinion was that the rail head should be carefully planed at all joints to a perfectly even surface to prevent cupping of the receiving rail. Several engineers explained the machine used for planing the rails.

"Economical Maintenance" was the subject of a paper read by Martin Schreiber, engineer of maintenance of way of the Public Service Railway of Newark, N. J. Mr. Schreiber recommended ample headquarters with proper yard and trackage facilities for handling the materials economically. He also

*A paper presented at the quarterly meeting of the Street Railway Association of the State of New York held at Syracuse, N. Y., Dec. 7, 1910.

recommended a series of standard switch pieces and frogs that were referred to the committee on standards with recommendation for adoption as standard practice. Undoubtedly all companies should follow these recommendations in designing special work, as renewals can be made immediately from a few stock pieces kept on hand. As the cost of manufacture would be greatly reduced, the resulting economy to the consumer would be considerable in the cost of special work, minimum storage investment, quicker delivery and easier installation. Standard specifications should be used in purchasing materials, preferably the specifications recommended by the association. Among the other recommendations were the following:

Grind rail joints to obtain a true running surface. Avoid compromise joints where possible. Maintain gravel beds and stone crushing plants for economy and to insure prompt delivery. Treat ties and structural timbers by preservative process. Companies should apply piece-work system to paving and any other work where practicable. Adopt a proper accounting and job order system. Compile accurate engineering records, including physical survey of properties, standard drawings properly indexed and filed. Adopt a standard system of symbols for notebooks.

Recommendation was made that next year's committee consider the compilation of a set of rules for the maintenance of way department. The report was profusely illustrated with drawings and cuts showing equipment for use in economical maintenance.

DISCUSSION ON REPORT OF THE COMMITTEE ON WAY MATTERS OF THE ELECTRIC RAILWAY ENGINEERING ASSOCIATION FOR THE YEAR 1909-1910 *

BY MARTIN SCHREIBER, ENGINEER MAINTENANCE OF WAY, PUBLIC SERVICE RAILWAY, NEWARK, N. J.

A recent editorial in the *Light, Railway & Tramway Journal,* London, Eng., stated that "One of the most interesting reports at the convention of the American Railway Engineering Association, held at Atlantic City, October 10, 1910, was that of the committee on way matters;" and, further, "Our American cousins have not always paid as much attention to track problems as we have in this country, but the proceedings of the Atlantic City convention show a very considerable awakening on the subject." If you will pardon me as a committee member, I do not hesitate to agree that the report did contain valuable data. It also was unique inasmuch as five distinct standards were recommended:

1—Standard T-rail.

2—Standard specification for open-hearth high T and girder rails.

3—Standard rules for gage of tracks and curves.

4—Standard switches.

5—Standard survey signs and symbols.

STANDARDIZATION OF RAILS

For T-rail, the "recommended practice" was simply changed to recommend a "standard," but the committee failed to decide on a standard girder rail. This, however, was not due to questions of underlying principles but rather to details of design, as explained by Mr. Ackerman, chairman. One point was that the depths of groove heretofore favored were 1¼ in. and 1⅜ in. In the light of experience and the advantage of longer life of the deeper grooves, it is now questionable if 1½ in. depth is not to be preferred. In the past engineers were of the opinion that the deep groove would not be adaptable to light vehicular traffic, as there was a possibility that the wheel fillers would become fast in the rail. However, the experience of those operating grooved rail, even of 1½ in. depth, does not seem to verify this contention. The Public Service Railway found that no more complaints were due to grooves of 1½ in. depth than to the 1⅜ in. depth, which was the former standard. I understand the same experience is true of the 1½ in. groove now on trial in Pittsburgh. Others also verify this experience. It appears that with users of the welded joint especially the tendency is toward rails 7 in. high rather than 9 in. high. A 7 in. rail, of course, saves weight, is more suitable and requires less excavation. We are just arriving at a time when it is proper generally to adopt a standard girder rail, excepting, of course, for special conditions. Heretofore the change from old tram and other eccentric sections to the new and much heavier grooved section was too great a step to expect general approval. Now it will be easier to introduce a reasonable section because it is almost universally realized that the heavy rail ultimately results in economy, particularly in view of the increased wheel loading. It is noticeable that the tram section is being abandoned, very few, if any, new sections being rolled. I believe that the tram rail will go. A proper grooved rail should be used wherever the T-rail is not suitable on account of paving conditions. A T-rail is generally adequate wherever a tram rail is good enough. In a way, the elimination of the tram is to be commended, as it is an indirect but substantial step toward minimizing the number of live sections that are in use.

The specifications originally drawn up for the committee by Mr. Larned provided for two classes of rails with chemical constituents, designated as "A" and "B." In "B," which is substantially the manufacturers' standard specification, the carbon was .60 per cent to .75 per cent, while "A" called for carbon varying from .72 per cent to .85 per cent. The chemical composition of "A" is seriously objected to by the manufacturers. It was pointed out that the phosphorus content was not proportionately reduced, which was very essential, to stand any reasonable drop test. Then there was the probable increase in cost if the manufacturers' specification was changed. Besides it was a question just how much carbon over .60 to .75 per cent should be specified. It is now generally conceded by engineers who have given special attention to the subject that a carbon content of .60 per cent to .75 per cent is about right for the heavy wheel loads and fast trains now required on steam railroads. High carbon tends too greatly toward brittleness. Dr. P. H. Dudley, a leading authority on rail matters, substantially verified these statements in a discussion before the New York Railroad Club, in September, 1910. Possibly the carbon content may be advantageously increased for the lighter wheel loads of electric railways. Hence the committee recommended a basic specification with a carbon content of .60 per cent. to .75 per cent. At the same time it was also stipulated for those who desired to increase the carbon above the manufacturers' standard and at possibly a modified price that an increase of .35 per cent carbon above the upper limit of the specification would be permitted for a decrease of one point (.01) per cent of phosphorus below .04 per cent phosphorus.

The proper drop test was also a point of considerable deliberation. On first thought the inexperienced engineer would insist on a more severe drop test for the high carbon rail than would be required for the low carbon rail. This is a mistake, as increasing the carbon, especially in some of the eccentric and unreasonable girder rail sections, makes the rail more susceptible to breaking under the drop. For that reason the drop was specified as 13 ft. to 15 ft. The drop test is more serious with the girder rail than the T-rail or a balanced section, even when shims are used to insure a vertical blow. In unbalanced sections the tendency to bow sideways often produces fracture. One of the difficulties in deciding on a standard specification is to get one that will be suitable for the varying weights and sections which must be met with at present. So another point in standardization of girder rail is the possibility of a better general specification.

SPECIAL WORK

Much has been said recently in support of solid manganese special work. After all, however, solid work seems rather extravagant in view of the present high cost of the manganese, the low salvage return and the fact that only approximately 50 per cent of the pieces receive any wear. Admitting that

*An abstract of a paper presented at the quarterly meeting of the Street Railway Association of the State of New York at Syracuse, N. Y., Dec. 7, 1910.

solid special work will have its field where heavy traffic is handled on short headways, it is, nevertheless, true that if a reliable hardened insert in cheaper cast metal could be devised it would meet with great favor. Iron-bound work with rolled rail and manganese for the principal wearing parts and cast steel with manganese centers often give excellent satisfaction, but their reliability cannot always be guaranteed. They will break when least expected and at the most inopportune times. It is hoped that the future will bring an improvement (possibly with the assistance of vanadium, titanium or some other metal) in a reliable wearing steel casting so that specials could be cast "en bloc" and have a manganese insert; the whole would be obtained at a low cost and be absolutely reliable and satisfactory for ordinary electric railway traffic conditions.

Standard switches, mates and frogs should be adopted. The standards recommended by the way committee and as proposed by the special work manufacturers are good, although improvement could be obtained for the cheaper hardened center work by more liberal dimensions in some cases. While on this subject it may be of interest to state that a few days ago I was particularly anxious to get some tie rod holes in a solid manganese guard rail. After asking several local machine shops, the idea had to be abandoned, as it was not practicable to take the rail to the shop. Then it was suggested that an oxy-acetylene flame might be used. It took about an hour to hire the apparatus and in less than two hours 36 holes were burned through the guard rail. One of the holes was made in 1½ minutes. (Mr. Schreiber showed the delegates one of the cores that was cut out of the rail in making the hole by the oxy-acetylene flame.)

JOINTS

The committee on way matters was fortunate to have received the able progress report on rail joints by Mr. Weston. The discussion of Mr. Lange on the same subject also brought out the great importance of variations in rail temperatures and their effect at the joint. It is true that definite recommendations were not reached in the papers, but the work cannot but appeal to the careful reader, because it is an effort to get at the basic and scientific principles of the performance of the rail joint. These principles must be thoroughly understood before any decided recommendations may be expected.

Just a year ago I brought to the attention of your Association the demand for a joint that would give approximately the life of rail in paved streets, also one that would minimize resistance to the electric current. I said then we must look to improvement in the various weld processes. The last year has seen work along these lines. The Lorain Steel Company has provided an offset at the centre of its bar to give support to the head, especially for weak sections. Likewise the Goldschmidt Thermit Company is using a method whereby the rail ends are held ¾ in. apart to get a better weld for the entire section. Likewise, in Detroit, the cast weld has been used with a water jacket to prevent heating the metal in the rail head. Experience alone will demonstrate just how successful these experiments will be. It suffices to say that it is to the welds and the high-class combination joints that we must look for advancement.

Stress should also be laid on the importance of grinding joints. Liberal grinding is a paying investment. A joint should not be left without having the abutting rail end surfaces at precisely the same elevation. In case of appreciable variation of rail end the top surfaces should be ground well back of the joints. Even with new rail it is almost impossible to keep the rolls in shape so that the rail ends will fish exactly. If you do not want cupped and pounding joints, do not allow them to get started.

In conclusion, I wish to state that the foregoing remarks are not intended to cover the extensive subject at issue. The idea of this paper simply was to mention a few of the points that may not have occurred to others who have read the text of the report of the committee on way matters.

HEARING ON SERVICE IN SUBWAY IN NEW YORK

A hearing was held before Commissioner Eustis of the Public Service Commission of the First District of New York on Nov. 30, 1910, "on the motion of the commission, on the question of improvements in and additions to the regulations, practices and service of the Interborough Rapid Transit Company, in respect to its subway lines." H. A. Butler, assistant counsel, conducted the case for the commission, and James L. Quackenbush, general attorney, and T. L. Waugh, counsel, represented the company.

Mr. Eustis said that the hearing was set on account of renewed complaints about the service on the Broadway branch of the subway. Only a few months ago a hearing was held as a result of which a change in schedules was made and it was supposed that partial relief would be given by the operation of certain local trains to Dyckman Street. That was in the spring. He presumed that during the summer the service was satisfactory, as there were not many travelers then. He asked to hear from complainants regarding the present service on the subway division of the company north of 137th Street.

One of the complainants suggested that the local trains which are operated north only as far as 137th Street should be run to Dyckman Street and switched there for the return trip. Data were then offered as evidence by the complainants to show that the service about which complaint had been entered was inadequate.

One of the complainants said that the extension of the local service to Dyckman Street was so simple a matter that it seemed to him there was no possible argument on the other side. Commissioner Eustis said that at the last hearing the statement was made on behalf of the railroad that if the company ran all of the trains through it could not get them back without upsetting the schedule of the express trains. The commission was going to do all that was possible to improve the service, but it could not go so far as to do anything that would disrupt the present service.

Frank Hedley, vice-president and general manager of the Interborough Rapid Transit Company, said that the total number of passengers on the Broadway line between the Dyckman Street station and 137th Street, both included, for July, August and September, 1909, was 3,411,332 and that for the same period of 1910 the total was 3,444,385, an increase of less than 0.1 per cent. In order to treat people on both sides of the city alike, trains should be withdrawn from the Broadway division and put on the Lenox division. He suggested that the company take every other local train in the morning between 7:30 a. m. and 9 a. m. and start it from Dyckman Street southbound, and in the afternoon take every other local train at the Brooklyn Bridge between 4:45 p. m. and 6:15 p. m. and run it through to Dyckman Street.

Mr. Hedley explained that the company was renewing the brake equipment on all of its subway cars, and was providing all of the subway equipment with new draft gear. These changes took many cars out of service. During the non-rush hours the company intended to provide a seat for every passenger. The inspectors of the commission took records of the traffic in the subway every day. Whenever the attention of the company was called to the fact that there was a period in the non-rush hours when every passenger was not provided with a seat the company increased its service and would continue to do so whenever the physical condition of the property would permit.

Mr. Eustis said in conclusion that the present orders of the commission required a seat for every passenger outside of the rush hours during periods extending 30 minutes. Every time the commission had checked the records it had been found that the company was not violating the order. It might, however, be necessary for the commission to shorten the half-hour period.

The hearing was then adjourned until 2:30 p. m., Wednesday, Dec. 7, 1910.

TRAINING OF TRANSPORTATION EMPLOYEES*

BY E. E. STRONG, CHIEF INSTRUCTOR, SYRACUSE RAPID TRANSIT RAILWAY.

The increasing interest of railway companies in the training of transportation employees is indicative of the success with which that branch of work has met. Ours is the only business in which success depends upon the efforts of men who have had little or no experience and whose worth in positions of responsibility is unknown to the employer. Steam railroads before appointing a man to a position of trust require him to acquaint himself thoroughly with the duties and responsibilities of that position by serving for a long time in subordinate capacities where advancement depends upon the loyalty and ability which he demonstrates. Electric railways, on the other hand, usually employ unknown men and after a few days' training place them in positions of trust and responsibility identical with those occupied by experienced men who have proved themselves reliable and competent. Indeed, the most remarkable feature of railway work lies in the fact that so large a part of the property is placed in the hands of unknown men upon whose judgment we hestitate to rely, but upon whose work depends the success of operation.

Since we must continue to employ men who are unfamiliar with trainmen's duties improvement over present conditions must come through the channels of careful and efficient instruction. Little is to be gained by increasing the force of inspectors, as this suggests the idea of compelling crews to perform their duties through fear of detection and consequent discipline. That unwilling or forced service is unsatisfactory is nowhere more clearly demonstrated than in railway work, since trainmen are so little under the eyes of officials who feel a live interest in the affairs of the company. In other industries workmen receive orders from their foreman and perform their duties under his direct supervision, while trainmen receive their orders from their superior officers and are soon out of their sight. Whether or not his orders are obeyed may not be known, unless special attention is given to certain men; while this is being done general supervision of the remaining force of men may be temporarily laid aside.

From the nature of the work to be performed it is evident that good results can be effected only by causing each man to feel a personal responsibility for his own work—to feel that he is an agent, so designated by his badge, authorized to do business for a corporation and that he is called upon to exercise such care and judgment as will yield the best result to his company.

The object of instruction is not only to teach employees how to perform duties mechanically, but to teach them the underlying principles, so that slight variations from the ordinary routine will not confuse them. Some time ago a new conductor remarked to me: "I have received a large amount of information and have kept it all in mind, but it is in chaotic condition; when I get it straightened out I'll get along all right." He had been shown detail after detail until his mind could no longer digest what it received. He had attempted to remember all he was told, like one who learns a rule, word for word, without comprehending its meaning. Had each point covered been assimilated through the power of reasoning there would have been no "straightening" to do.

These men should be taught method and system, not mere detail. In teaching method it is necessary to convince them of the superiority of that method over any others they may have observed. Once they are convinced they will accept your methods and you are assured of as good operation when they are out of your sight as when under your observation.

Some operating men object to the use of an instruction car for motormen on the ground that when a break occurs the motorman's duty is to get his car clear and not to make repairs. To teach men how to repair defective equipment is the least important use of an instruction car; its chief object is to demonstrate the effects of proper and improper operation. Occasionally men who have been employed by other companies enter our service and we find that they have been taught to use a certain period of time for "notching up" the controller. This method is entirely insufficient, especially on a system where grades are variable. We may teach a motorman not to run on resistance points or he will overheat the resistance. Any man may be able to recite these words, but the all-important question is: "How much does it mean to him?" Under old methods we found that men who would tell us that slow feeding would heat resistance did not know what resistance was nor where it was located. With an instruction car, on which all equipment is exposed to view, we now run for a short distance on resistance and allow the men to observe for themselves how quickly current produces heat, thus fixing an important fact permanently in their minds. In similar manner all parts of the brake and electrical equipment may be shown to motormen and the use of each part demonstrated.

We believe that a motorman should understand what takes place as he advances the controller; why a circuit-breaker releases; why a fuse melts; why moving the brake handle to one side sets and to the other side releases the brakes. Possibly he may never have occasion to tell what he knows, but his knowledge cannot but make him more careful of equipment, since he knows the effect of each operation. It may seem extremely optimistic to state that men will refrain from misusing equipment because they know that misuse results in damage, but, on the other hand, it would be erroneous to believe that men destroy property intentionally or maliciously.

In training student motormen we have found it advisable to call them together twice each week for a three-hour session, rather than to devote a whole day at a time to this part of their instruction. In this way we cover all parts of the electrical and brake equipment in the different sessions which a student attends during the "breaking-in" period, and still do not crowd so much upon him at any one time as to confuse him. This plan also affords him the opportunity of asking questions regarding observations he makes while on the various lines. It is gratifying to note how much interest students take in this feature of their training and we believe we are fully paid for the effort expended in this way. While a motorman may never make direct use of all this knowledge it forms for him a sort of mental reserve that makes him more competent. Each piece of equipment before being put into service is subjected to test and in this test must stand up under conditions more severe than those met in ordinary service. Is it consistent, then, to put this equipment in charge of a man who is taxed to the limit of his mental strength merely in applying brakes or power? A car may be equipped with modern safety devices and with the best of appliances with which to control it, yet, if this car is operated by a motorman whose mental make-up or whose training is insufficient, the most important element is still wanting.

Recently we have made use of our classroom for conductors also. It had been our custom formerly to place a student on each of the lines under certain conductors who were designated as instructors. After learning all the lines the student presented himself to the chief instructor for final instructions and examination, after which he received his badge. This method proved unsatisfactory for the reason that the instructors varied more or less in methods of performing their duties. The effect was to confuse the student, who, from inexperience, was unable to select or adhere to any one way. The chief instructor went over each point and gave careful attention to register operation, trip sheets, transfers, mileage, accident reports, etc., but the instructions of a few hours were not sufficient to counteract any faulty method that had been practised for several days. Though the student could give evidence of understanding each point at the time, he went back to the methods he had learned first as soon as he took charge of a car.

As the first impression is the most lasting we determined to have that impression correct. At present all student conductors are called together three times during their first week with the company. At the first meeting they are taught the use of schedules, the proper method of making trip reports and the

*A paper presented at the quarterly meeting of the Street Railway Association of the State of New York held at Syracuse, N. Y., Dec. 7, 1910.

operation of the register. At the second session careful consideration is given to issuing and accepting transfers and to the use of the different forms upon which conductors are required to make reports. At this time they are also given a talk on the methods of doing their work effectively and quickly, special care being taken to impress upon them the fact that courtesy on the part of employees is one of the most valuable assets of a company. At the third meeting attention is given to the prevention of accidents, to methods of procedure in case of accident, the necessity of securing witnesses and to accident reports.

The student, whether motorman or conductor, after attending sufficient classes to receive the required training, learns the remaining lines and then returns to the instruction department for final instructions, trial trips and an oral examination on the book of rules. If found satisfactory he is given a certificate with which he presents himself to the superintendent or other duly authorized representative of the transportation department and is given a badge and other necessary tools. The written examination on the book of rules is given at the end of 30 days, at which time the men have gained the knowledge from experience to assist them in giving final and intelligent answers to the questions.

It will be noticed that the student is not required to go here and there for instructions, but receives all from the instruction department. This has been deemed advisable, since at the best the "breaking-in" period involves considerable hardship, and if a student is required to go from department to department after he believes his work is completed he becomes discouraged and gains little from what he hears. Moreover, many of these men, feeling a sense of strangeness in first meeting an official, are not in the proper condition of mind to receive or to assimilate instruction.

With our methods students become sufficiently acquainted with the instructors to overcome their timidity and may be led to engage in discussions and to ask questions pertaining to their duties. This opens the way to the most effective method of teaching; namely, that of leading the student from the known to the unknown by asking such questions as will compel him to think with you and to use his own power of reasoning.

The work of the instruction department does not end when a man receives his badge. On the contrary, each new man is followed up daily by traveling instructors until he gives evidence that he has formed the habit of doing his work properly, whereupon inspection becomes less frequent. In this way, any wrong tendencies may be curbed before they become a part of the man's regular method. The instructors endeavor to make the motormen and conductors feel that they are desirous of giving assistance and it is interesting to note the increasing tendency to call upon the instructors for help and advice.

The work as outlined above covers only the line of procedure followed out in the training of new men. In addition to this, we also call all trainmen together two or three times each year for instruction on points of general guidance, such as courteous treatment of the public, prevention of accidents and any special features that may require attention at the time. With a view of urging the employees to the necessity of extreme care in order to avoid accidents, we make use of a chart showing the number of accidents of each class occurring on each of the various lines, the total number of each class, the total number on each line and the grand total of all accidents occurring within the period under consideration.

In order that the motormen and conductors may not neglect to keep themselves familiar with the rules of the company we re-examine them on the book of rules every three years, making use of the same printed forms as are used at the first examination. On the whole, we may say that the results of instruction have been wholesome and gratifying, and that what we need at present to insure a greater measure of success is not a means of compelling trainmen to submit to arbitrary rules, but a means to instil into them the spirit of generous and conscientious co-operation.

ALLOWANCE FOR OBSOLESCENCE UPHELD IN FRANCHISE TAX CASE

A decision was rendered by Justice Randall J. Le Bœuf, of the New York Supreme Court, on Nov. 25, upholding the contention of the Brooklyn Rapid Transit Company that the franchise tax valuation on certain surface subsidiary railways as fixed by the State Tax Commission should be reduced from $1,365,842 to $334,538. The court upholds the reasonableness of an allowance for obsolescence and inadequacy of equipment. The decision says in part:

"If the State Tax Commission's decision is to be construed as laying down the rule that no allowance shall be made for obsolescence or inadequacy of equipment, not yet sustained, but capable of reasonable ascertainment for the future, it does not appear to me to be consistent with the expressed policy of this State. As surely as humanity travels from the cradle to the grave the machinery and equipment of a public service corporation travel toward the scrap pile. The plant and structures depreciate in less degree, but as certainly. This is ordinary depreciation.

"But another form of depreciation in the case of properties herein being valued takes place. The machinery or equipment, while still capable of years of service, becomes inadequate to do the work demanded—not only by the corporation but by the law itself. In the case particularly of electrical machinery the type becomes obsolete by reason of invention, as increasing public demands frequently require in aid of safe and adequate service that the obsolete appliance or equipment give way to renewal.

"Some of these changes are capable of definite ascertainment. Many of them may be provided against for the future by setting aside from gross earnings a reasonable sum to create a reserve against the day when they shall come. This reserve, with the amounts set apart for ordinary depreciation, goes to amortize the capital of the company. Amortization of capital is something of a novelty in the case of public service corporations. Amortization of securities of trustees and money corporations has been known for many years and the principle has been applied by manufacturing corporations. Public service corporations alone were slow to recognize this necessity.

"The wrecks of many of such corporations scattered throughout the State would not to-day be seen if early this principle had been applied to their accounting.

"In the old days, after original paid-in capital and original bond issues had regularly paid their dividends and interest out of earnings and the plant had depreciated or become in whole or in part inadequate or obsolete, it was necessary to issue a new batch of bonds to cover a new plant, while the old plant was actually on the books at practically its original value. Capital remained apparently unimpaired and clamoring for dividends. If the money were actually obtained the bondholders sooner or later owned the road, and upon reorganization were obliged in the interest of the property to eliminate in whole or in part the original stockholders.

"The Public Service Commission law recognizes this amortization principle, and yet the State Tax Commission is insistent that no reasonable basis exists for the creation of an amortization fund.

"If a public-service corporation comes into court and requests that it be permitted to set aside a reasonable amount of its gross earnings for such an amortization fund it is difficult to understand why the court should refuse to consider that request."

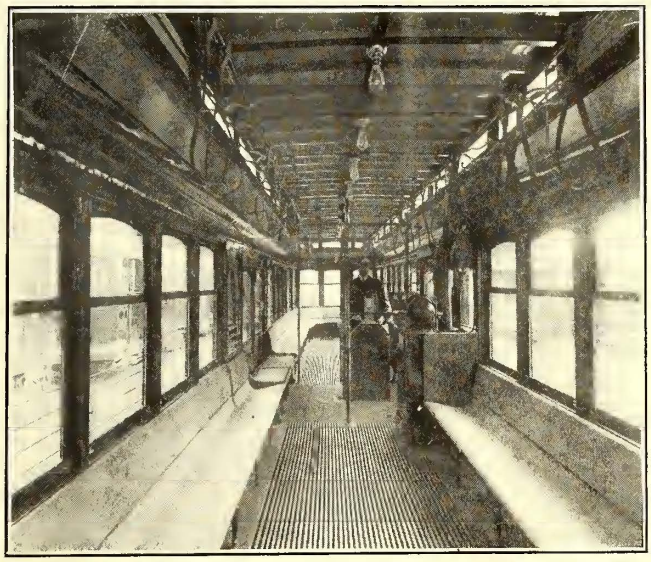
Consul William Coffin, of Jerusalem, has transmitted to the Bureau of Manufactures, Washington, D. C., translated copies of the contract and specifications for the tramway concession in Jerusalem and a copy of the original French text of the concession. All these papers are on file in the Bureau of Manufactures and can be obtained by interested American contractors by referring to file No. 5863.

CENTER-VESTIBULE STEEL TRAILERS FOR PITTSBURGH

The Pittsburgh Railways Company is now placing in service a new pay-at-entrance trail car of the novel center-entrance and exit design shown in the accompanying illustrations. Fifty of these cars were ordered of the Standard Steel Car Company some months ago, but, owing to various delays in manufacture, are only now beginning to arrive. The car is of steel up to the letter board with the exception of the floors and seats. The entrance and exit are at the center of the car, so that the seats extend clear around the car, except across the door.

The car seats 62 people and complete with trucks, Peter Smith hot-air heater and all details ready to operate weighs only 22,300 lb., or 360 lb. per passenger. When coupled to one of the railway company's semi-steel pay-at-entrance cars the two-car train furnishes 118 seats. The car is mounted on trucks having wheels only 22 in. in diameter. Thus the floor can be placed 20 in. above the rail and be on a level with the back platform of the ordinary car. This arrangement allows the use of only one step up into the car and facilitates the loading and unloading. The accompanying view of the interior shows the position of the conductor and cash box near the entrance.

Pittsburgh Trailer Operation—Center-Vestibule Trail Car



Pittsburgh Trailer Operation—Car Interior, Showing the Position of the Conductor

Some of the most important dimensions of these trailers are as follows: Length over all, 45 ft.; width over all, 8 ft. 2 in.; step heights, 16 in. and 14-in.; height from the rail to the top of the roof, 10 ft. 6 in.; truck centers, 22 ft. 6 in., and wheel base of truck, 4 ft. 4 in.

HEARING BEFORE INTERSTATE COMMISSION ON STEAM-ELECTRIC INTERCHANGE

The Interstate Commerce Commission on Dec. 1, 1910, gave a hearing at Washington on the petition of the Cincinnati & Columbus Traction Company, which operates an electric railway between Cincinnati and Hillsboro, directed against the Norfolk & Western Railway and the Baltimore & Ohio Southwestern Railroad.

The complainant desired to connect its line with those of the defendant at Hillsboro, with a view to participate with them in the interstate commerce of that section of the State. The steam roads refused to permit the connections to be made on the ground that under the law satisfactory through routes and joint rates already were in operation, and that, inasmuch as the electric railway practically paralleled the lines of the steam railways, to grant it such connections as demanded would merely subdivide an already insignificant interstate business. The Cincinnati & Columbus Traction Company held that the attitude of the steam railroads was untenable and was assumed because the complainant's line was operated by electricity.

HEARING ON SERVICE IN QUEENS COUNTY

A hearing was held before Commissioner Bassett of the Public Service Commission of the First District of New York on Dec. 1, 1910, to inquire into the service furnished by the New York & Queens County Railway. One of the principal causes of complaint is the question of diverting cars from the ferry at the foot of Borden Avenue, Long Island City, over the Queensborough Bridge to New York, and operating a shuttle service from the plaza of the bridge in Long Island City to the ferry. It was explained that it would be physically impossible with the present facilities of the company to establish the reduction in the headway of cars which the complainants had suggested. The company had awarded contracts for 25 cars, but the car builders were behind with their work. Six of the cars had been delivered, six were in transit, and the remaining 13 cars would be shipped by the end of December. Mr. Bassett instructed E. G. Connette, transportation engineer of the commission, to study traffic conditions on the lines of the company and confer with the officers of the company and then report to the commission.

Pittsburg Trailer Operation—View of Motor and Trail Car Illustrating the Respective Places for Boarding and Alighting, Except That the Front Exit of the Motor Car Is Not Shown in Use

ANOTHER SUBWAY PROPOSAL IN NEW YORK

On Dec. 5, 1910, the Interborough Rapid Transit Company submitted a proposition to the Public Service Commission to build and operate extensions to the subway system, Briefly the proposal of the company provides for that portion of the triborough subway from Forty-second Street north with a subway in Lexington Avenue and elevated extensions to Pelham Bay Park and to Woodlawn Cemetery in the Bronx; a subway down Seventh Avenue from Forty-second Street south, continuing under Varick Street and West Broadway; a tunnel to Brooklyn in the neighborhood of Wall Street connecting with the Lafayette Avenue subway which the company proposes to build and also with the Fourth Avenue subway now under construction by the city. The company also proposes to operate the Fourth Avenue subway and to build an elevated extension to Coney Island and a subway extension to Fort Hamilton.

The proposal of the company was addressed to William R. Willcox, chairman of the Public Service Commission of the First District of New York, by Theodore P. Shonts, president of the Interborough Rapid Transit Company. After reviewing the lines which the company proposes to include in its offer the letter from the Interborough Rapid Transit Company continues in part as follows:

"The cost of constructing and equipping the foregoing lines is estimated at $128,000,000. The Interborough Rapid Transit Company hereby offers to build and equip the same for $53,000,000, to be furnished by the city, the city to provide in addition the necessary easements and right-of-way, and the company to supply the funds necessary to defray the additional cost of construction and equipment, which, upon the basis of the above estimate, would amount to $75,000,000. The work will be done as 'extras' under the terms of the rapid transit contract of Feb. 21, 1900, under which the original subway was constructed and is operated, except so far as the terms thereof may be modified by the provisions, except this offer; and the lines when constructed and equipped will be operated by the Interborough Rapid Transit Company as parts of the existing subway system, with a single 5-cent fare and free transfers, upon the following terms:

"1. The net profits from operation, to be arrived at as hereinafter provided, shall be disposed of as follows:

"(a) The city to take all net profits for the first five years from the time of beginning operations on any portion of the new subway extensions;

"(b) The net profits after five years to be equally divided between the city and the Interborough company.

"2. The net profits shall be determined by deducting from the gross revenue of the extensions charges for the following items, in the order named:

"(a) Maintenance of equipment, including an allowance for depreciation;

"(b) Maintenance of way and structures, including an allowance for depreciation;

"(c) Traffic expense and cost of conducting transportation;

"(d) General and administration expenses;

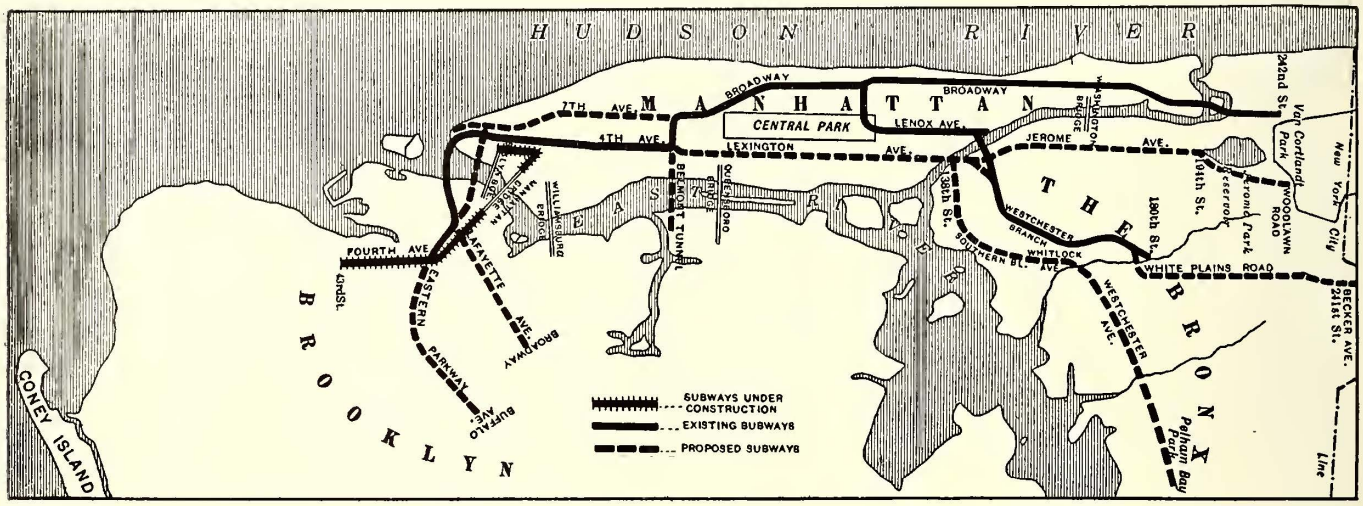
"(e) Taxes, if any;

"(f) The actual annual charges of the company for carrying the cost of equipment and providing a partial sinking fund of ¾ of 1 per cent per annum to meet obsolescence and for carrying that portion of the cost of construction not met by the funds contributed by the city and providing a sinking fund of 1 per cent thereon;

"(g) Interest on bonds issued by the city to defray the cost of construction, plus 1 per centum per annum as a sinking fund.

"3. The gross operating revenue of the new extensions shall be ascertained from the number of tickets sold at the stations along the new extensions, or from the number of tickets deposited in the chopping boxes on the new extensions.

"4. If the gross income in any year, after providing for the charges above mentioned, shall be insufficient to meet the interest and sinking fund upon the construction and equipment bonds issued by the company, the deficit for such period shall be borne by the company, and shall not be a cumulative charge against future earnings.



Present and Proposed Underground Lines in New York Referred to in the Proposition of the Interborough Rapid Transit Company, Submitted on Dec. 5, 1910

"5. If the gross income for any year, after providing for all charges above mentioned, including interest and sinking fund upon bonds issued by the company to defray the additional cost of construction and equipment, shall be insufficient to meet the interest and sinking fund upon the city's bonds, the deficit sustained by the city for such period shall accumulate and be a charge against the future profits before any division thereof shall be effected between the city and the company.

"The city will retain the right, now provided for by law, to take over the extensions at any time after 10 years from the time that any portion thereof may be put into operation, upon paying to the company (a) the amount of its investment in construction over and beyond the $53,000,000 supplied by the city, plus 15 per cent, which sum shall decrease as the term continues, so that at the end of the full term of the contract under which the said extensions may be built as extras no amount will be required to be paid by the city, and (b) the then reasonable value of the equipment.

LETTING OF CONTRACTS

"If this proposition be accepted we are prepared to enter immediately into contracts to carry the same into effect. Each part of the road as completed will be immediately opened for operation.

"We have considered your suggestion that the present sub-

way leases should be so altered that the terms thereof and of all extensions thereto operated by the Interborough Rapid Transit Company should end at the same time. Contract No. 1, under which the Manhattan portion of the subway was built, provides for an original term of 50 years, with the right to renewal for an additional term of 25 years. Contract No. 2, under which the line from the City Hall Park to Flatbush Avenue in Brooklyn was built, provides for an original term of 35 years, with the right to renewal for an additional term of 25 years. We are willing, if it can be legally arranged, that these contracts should be so modified that the original terms thereof and of all extensions built as extras under Contract No. 1 should be fixed at 49 years from the date of the completion of the extensions, and that the privilege of the renewal terms of 25 years should be canceled.

"The company also offers to equip and operate, under a lease for a term equal to the unexpired term of Contract No. 1, under which the original subway was built, the Fourth Avenue subway in Brooklyn, including extensions to Fort Hamilton and Coney Island, when completed, as part of the present subway system, for a 5-cent fare, upon the following terms:

"The gross earnings of the Fourth Avenue division, of which a separate account shall be kept between the city and the company, shall be ascertained from the tickets deposited at the stations upon the division. From the gross earnings thus ascertained shall be deducted: 1. (a) All station expenses; (b) Maintenance of way and structures; (c) Damages for accidents happening on the division.

"2. Other operating costs to be determined according to unit costs on the Interborough system, upon a car mileage basis: (a) Conducting transportation; (b) Maintenance of equipment and depreciation; (c) Cost of power; (d) General and administration expenses; (e) Taxes, if any.

"3. After the payment of the foregoing charges the actual annual charges of the company for carrying the cost of equipment and providing a partial sinking fund of three-fourths of 1 per cent per annum to meet obsolescence.

"4. From the balance of the income then remaining shall be paid interest and sinking fund upon bonds issued by the city to defray the cost of construction upon that part of the road equipped and operated by the Interborough company.

"If the income shall be insufficient to meet the foregoing charges, or any part thereof, the deficit shall be paid annually by the city, but that portion thereof which represents payments made by the city upon bonds issued by the city as hereinbefore provided for shall accumulate and be a charge against future profits before any division thereof shall be effected between the city and the Interborough company.

"5. The net profits remaining after providing for the foregoing charges shall be equally divided between the city and the company.

"The proposition herewith submitted is believed to embrace the following advantages over any other now before the city:

"1. Citizens of Brooklyn, Manhattan, Queens and the Bronx may be transported to any point upon the enlarged subway system for a 5-cent fare.

"2. The extensions proposed can all be completed within a period of five years from the time when the right to begin construction is given.

"3. The plan set forth leaves free for additional extensions, or for such other purposes as the city may determine upon, the funds which will be available in each succeeding year.

"4. The city under the plan proposed would have in operation a harmonious subway system, with a through four-track line upon the east side and a through four-track line upon the west side of Manhattan, with suitable extensions to the Bronx and Brooklyn.

"5. If competition with the Interborough Rapid Transit Company be the prime consideration, it is believed that by the construction of the proposed extensions the city will be in a position to establish an independent competitive line at an earlier date than would otherwise be possible. The west side downtown extension and the east side uptown extension in Manhattan, together with the Bronx and Brooklyn extensions, could be taken over after 10 years from the time when the lines or any part thereof were put into operation.

"The Belmont tunnel, when completed, will represent a total investment of approximately $10,000,000. It will therefore be perceived that the contribution which the Interborough Rapid Transit Company proposes to make from its funds toward the establishment of a well-rounded rapid transit system in this city approximates a total of $107,000,000, against a contribution of $53,000,000 on the part of the city."

William G. McAdoo, president of the Hudson & Manhattan Railroad, in a recent letter to William R. Willcox, chairman of the Public Service Commission, says that if the commission does not make a decision on the offer to operate the proposed tri-borough route on or before Dec. 15, 1910, the offer will be withdrawn. Mr. McAdoo said in part in his letter:

"Our proposal is for the operation, not construction, of the system. If the commission should determine to award contracts immediately, we would respectfully suggest that action be postponed on those sections affected by the changes which will be necessary if our proposition be accepted. These changes will not, on the whole, delay progress of the work.

"We do not want to appear as attempting in any manner to influence the action of your commission in regard to these matters, as we realize that they are the subject of your own discretion and judgment. Our purpose is merely to suggest the wisdom of withholding contracts for these sections until a decision on our proposition can be reached, since the changes in question can probably be effected more economically and with greater advantage in advance of the letting of such contracts than afterward.

"We trust that the commission may find it possible to render a decision on or before Dec. 15, 1910, at which time we shall be obliged to withdraw the offer if nothing shall have been done. We do this because we feel that it is to the interest of the public and of all concerned that prompt action shall be taken."

In a speech which he made at the luncheon of the City Club on Dec. 3, 1910, Mr. McAdoo commended the plans for the tri-borough subway as projected by the Public Service Commission. In the course of his remarks he said:

"I think the plan can be bettered in some respects, but I am frank to say also that you can appoint a hundred bodies or committees of engineers or of citizens and ask them to study the subway problem and submit a plan, submit suggestions and submit specifications and I will guarantee that no two of them will be in accord either as to the route or as to the specifications, or as to anything, but I think that the duly constituted authorities under the law are the people to make that plan.

"Now, I am perfectly frank to say that any intelligent study of the question of competition will convince any intelligent mind that any competition which is destructive of reasonable rates among carriers is unwise, is uneconomic and is something that ought not to be had; but competition, on the other hand, which does not mean destructive rates, but does mean improvement in the service, a competition in quality and quantity and general treatment of the public, is very desirable.

"The construction of the larger dimensioned tunnel means not only better and more economical operation, but it also means better ventilation, it means lower temperature in those tunnels, and it means to every man, woman and child who rides in the cars greater comfort because of the better temperature and better ventilation.

"I believe absolutely that if the City of New York to-day would give to private capital a franchise for 75 years, under which there may be the necessary guarantees for continued use and operation of this property, and you would give to private capital all of the surplus earnings after paying 4 per cent to the city and the sinking fund, then you could get the money with a guarantee to the city, but when you say that after 10 years, if it is a profitable investment, the city reserves the right to take the property, I say you can't do it, and I say no gentleman in this room would put money into a proposition of such a character unless he had such a long term."

On Dec. 5, 1910, Frank J. Sprague gave an interview in which he said that he realized that Mr. McAdoo had him in mind when he referred to certain matters in his City Club speech, particularly in the statement that certain critics of the tri-borough system had said that it would be impossible to find a railroad man to operate the new system under any conditions. Mr. Sprague declared that what he did say was that it would be most unlikely that an operator could be found to assume the task under what has hitherto been set forth as essential, that is, a guarantee of first lien in favor of city interest and sinking fund and the operation of the Brooklyn loop and the Canal Street extension.

According to Mr. Sprague, Mr. McAdoo's proposal for a route as it relates to the three boroughs is so changed that his plan is a selected one, made up of the Manhattan heart of the sections recently bid upon and other new and more valuable routes not forming any part of the original tri-borough system for which bids are now demanded. Mr. Sprague said he was willing to make a bid, under certain conditions, for the operation of the same system which Mr. McAdoo is willing to bid for, or for an alternative route, and to guarantee, under heavy forfeiture, that his proposal will be a much better one, so far as the city is concerned, than Mr. McAdoo's. The conditions which Mr. Sprague lays down are that the city shall abandon its demands, which have hitherto ruled with regard to the Interborough Rapid Transit Company, of a guarantee of the interest and sinking fund against the cost of construction, and permit private capital to have prior lien on the net earnings and state that competitive proposals will be accepted under seal at a specified date.

Commissioner Eustis said to representatives of the Tri-borough League who called on the commissioner recently to urge that contracts be awarded for the construction of the tri-borough system:

"We certainly must consider whether an operator can be secured under fair terms, before deciding upon a route. It may be necessary to readvertise for new bids, as those received on some of the sections were far from satisfactory. On the Canal Street crosstown line, for instance, the bids were so much above the estimate that our engineers are making revised plans."

DISCUSSION OF THE REPORT OF THE COMMITTEE ON EQUIPMENT *

BY W. J. HARVIE, CHIEF ENGINEER, SYRACUSE RAPID TRANSIT COMPANY AND UTICA & MOHAWK VALLEY RAILWAY

There are two items among those which were considered by the committee on equipment at Atlantic City last October to which I wish especially to call your attention.

The first was the matter of satisfying the demand for a reasonable system of units of comparison of car weights. The need for a suitable unit of this kind is generally acknowledged and the committee made considerable progress when it carried the matter far enough to report and make a suggestion. The following are paragraphs from the report:

"The recent growth of interest in the question of car weights has developed a demand for a rational system of units of comparison. The unit most used in discussing car weights is 'pounds per passenger seat.' This is a very convenient and instructive unit of comparison for cars of the same general type, in similar service, and undoubtedly will continue to be used.

"It should always be remembered, however, that this unit may be quite meaningless in comparing cars of dissimilar types. For instance, the statement that a car weighs 2000 lb. per passenger seat conveys an impression of excessively heavy construction; but the further information that half the car is devoted to a baggage compartment calls for quite a different opinion. Again, the statement that a car weighs 550 lb. per passenger seat might lead to expectations of extraordinarily light construction which would be at once dissipated on learning that the car is a 15-bench open one.

"There seems to be a need of a unit of comparison applicable to car bodies of different types, and it is suggested that this unit should be 'pounds per square foot of area.' The area considered should be calculated by multiplying the extreme length of the car, over platform end framing, by the greatest width, excluding steps or running boards.

"It is suggested that weight of trucks should be compared on the basis of 'pounds per ton on center plate,' as it is obvious that trucks must be designed to carry the maximum load. The weight of car plus maximum load is the proper center plate load basis."

The idea here expressed is an excellent one and it is to be hoped that this committee will continue its investigation along this line until it is assured that it has found the right unit.

The second matter might be called the "rational method of reducing car weights." Three general methods are suggested for the reduction in car weights:

(1) By reducing body weights.
(2) By reducing truck weights.
(3) By reducing electrical equipment weights.

A great deal of attention has been given of late to the reduction of body weights, and some progress has been made. But human nature is very apt to go to extremes and we must watch out that we do not get too light a car body. This may safely be left to the committee.

Into the second item, truck weights, railway men have not gone so thoroughly until lately, but it would seem that there is considerable opportunity for development in the manufacture of light trucks. The truck builder can do much to facilitate this improvement and the committee is to be commended for its work in getting the truck builders interested in this matter. The committee states that truck manufacturers find a good deal of their trouble in lightening the design of trucks due to the individuality, if it may be so called, of operating engineers in specifying sizes and types of wheels and axles. It would seem that this matter will regulate itself shortly by the introduction into actual practice of the various standard axles and wheel sections which have been adopted by the American Electric Railway Engineering Association. This result, however, must of necessity be a matter of gradual growth. We, as railway men, as far as is possible on our systems, should gradually adopt these standards.

Regarding the third item, the matter of light electrical equipment, we can, of course, get more horse-power out of present types of motors by providing for higher motor temperatures. It would seem, however, that a very considerable and immediate saving might be made in the use of single end instead of double end equipment. This is, of course, a subject which is somewhat threadbare, but the immediateness and ease of application of this partial remedy is the reason for its mention here. I am glad to note that there is a growing tendency of those who are most vitally interested in continuity of operation toward single end equipment. It is granted, of course, that the double end equipment will be more flexible in operation, and as stated in the report: "The first and foremost necessity in any equipment must be its reliability of performance; second, the cost of operation; and, third, the cost of maintenance."

It appears that the first of these is fulfilled by the single end equipment except in the case of extraordinary interruption of traffic, such as fires and the like; the second condition is fulfilled completely by the single end equipment, as is also the third. Against the emergency cases cited in the first instance must be balanced the cost of carrying around continually an extra ton or more of weight at $110 to $125 per year per car.

Several other methods of reducing the weights of electrical equipment are suggested, but it would seem that the most available one just now is the one to which I have called attention above. The advisability of using two-motor equipment further to reduce weight is, I believe, open to further investigation.

*Abstract of paper presented at the quarterly meeting of the Street Railway Association of the State of New York held at Syracuse, N. Y., Dec. 7, 1910.

TRAINING OF TRANSPORTATION EMPLOYEES*

BY W. H. COLLINS, GENERAL MANAGER, FONDA, JOHNSTOWN & GLOVERSVILLE RAILROAD.

The topic for this paper was left to my own selection, but there was a provision that it must be the question or subject discussed at the Atlantic City convention which most interested me, and I have, therefore, selected the report of the committee on the training of transportation employees. It would be difficult to find a more important subject for discussion among operating railroad men. This is a question in which we all are vitally interested, and one that comes home to every one of us, no matter to what department we belong or what position we may hold, as each of us knows that the success or failure of the property must ultimately depend upon the transportation department.

The report states that the committee devoted its work principally, during the last year, to the consideration of two subjects, which seemed to it to be especially important at this time. These subjects are:

1. The most effective method of educating new men "during the breaking-in period" to render them sufficiently familiar with the duties they will be called upon to perform to warrant their being intrusted with the operating of cars.

2. Ways and means from an operating standpoint to render employment on electric railways more inviting to a higher class of men, and to induce efficient men to remain.

The report of the committee is based upon the assumption that the applicants have been properly selected in accordance with the recommendation as outlined in the reports of previous committees.

I agree with the committee that more time and attention should be given to the instruction of the student in the mechanism of the car which will be placed in his hands for operation. On the large systems, especially the large city systems, where schools of instruction are in vogue, this matter is undoubtedly given the attention which it deserves, but on the medium size or smaller properties too little attention is the rule rather than the exception. Where there is no school of instruction, or where no skeleton car is used, it is the usual custom to have the student motorman work in the shop or pit to obtain the necessary information regarding the mechanism of the car. Have you ever noticed how much attention is paid by the shop or car-house men to see that the student is properly instructed? It has been my observation that, as a rule, the shop men and depot men are not much interested in educating motormen, but are more interested in trying to get the student to do as much of their own work as possible. I have often found a student learning the detail operation of motors, controllers and brakes while busily engaged in cleaning bearings, or perhaps tracing the flow of current in the work of removing grease from gears and pinions, with a little diversion now and then in the way of cleaning out the pit. Usually a week or 10 days is the time allotted the student in the shop or barn, in which he is supposed to learn all about the operation of mechanism of the car, and for which he is either allowed no pay at all or about one-half pay.

I think most of us can imagine in what a confused condition the mind of the student must be after passing through this experience and how ill fitted he is to cope with some minor difficulty which may arise in the operation of his car, which may be the cause of a serious tie-up in traffic that could easily have been avoided if the motorman had been properly trained. I believe that where there is no school of instruction, or where no instructor is provided, the student should be placed in the shop or depot in direct charge of the foreman and should be left there a sufficient length of time to become perfectly familiar with the mechanism of the car. I also believe that he should be paid regular wages while he is serving this time, and the responsibility for his proper instruction should be placed upon the foreman in charge, and he should not be permitted to take charge of a car until O. K.'d by the foreman or master mechanic.

The report of the committee with respect to the conductors' course would seem to cover the situation quite fully.

The recommendation of the committee with respect to further instruction after completion of the student's course is good, but it appears to me that right here is the crucial point of the process through which the student is passing. He is now to be instructed by the superintendent or other responsible official on points covering his general work. Up to this time it appears to him to have been very much of a one-sided affair; the company first demanding proper references, the filing of an application blank, assurance of willingness on his part to obey all rules, agreement to assume all risks by reason of his employment, breaking in for a period of two weeks or more without pay, serving time in the depot or shop with little or no pay before he can qualify for the position. Now, I believe, the time has arrived when the superintendent or examining official should begin his real missionary work. After properly instructing the student with reference to his duties toward the public, the importance of promptness in reporting for work, the necessity for cheerful obedience in carrying out all orders from superior officers, he should outline the policy of the company with respect to the treatment of its employees. He should make the student understand that the policy of the company is to give every man a square deal. Make him feel that loyalty is the first requisite and that, in return, the company will be interested in him and will desire to have him become a permanent part of its organization. Such a declaration on the part of the company, through the medium of its superintendent or examining official, cannot but have its effect on the applicant, provided he has been properly selected. He begins to look at things in a different light, as he has now obtained his information regarding the policy of the company at first hand, and he begins to feel that the company is interested in his welfare.

After a certain period of probation the student should be subjected to a written examination based on the book of rules, and should be required to pass it satisfactorily. These examinations should be taken in the proper manner under the eye of the superintendent or examiner appointed for that purpose, and the examination papers should be properly signed by the examiner and filed. To my mind they constitute a record of exceeding importance and may be of great value to the company in a case of a serious accident, besides having been of great benefit to the employee.

I believe great strides have been made during the past few years in the selection and training of transportation employees. I do not believe, however, that we have kept pace in this respect with the rapid changes which have taken place during the evolution of the electric railway business, but we are gaining ground. We are now conscious of the fact that we are engaged in real railroading and that it requires men of different caliber, and that something more is required in the training of them than under former conditions. We realize, more than ever before, that the positions occupied by transportation employees are important, and that there is a dignity and responsibility attached to them; and this thought we must impress upon the mind of the employee. He should be made to feel and understand that we consider his position a responsible and dignified one, and that that very fact is the reason why so much time and thought are expended in his selection and training. Make him feel that the position and wages received compare favorably with those of the machinist and other craftsmen; that the work is clean; that the conditions under which he labors are favorable compared with many other vocations, and that he should enter this business with the idea of making it his life work.

I am a great believer in "follow-up" work, and think that it should continue for some time; in fact, it should never be entirely relaxed. It can be taken up along educational lines, which, I believe, is one of the best means of reaching and maintaining high efficiency among employees.

*Abstract of paper read before the quarterly meeting of the Street Railway Association of the State of New York held at Syracuse, N. Y., Dec. 7, 1910.

REPORT OF THE COMMITTEE ON THE MEANING OF THE WORD "CENTER-BEARING" IN THE NEW YORK STATE RAILROAD LAW*

BY W. H. COLLINS (CHAIRMAN), M. J. FRENCH AND B. E. TILTON.

Your committee appointed at the annual meeting of the association held at Cooperstown on June 27 and 28, 1910, for the purpose of conferring with the Public Service Commission as to the proper interpretation of Section 192, formerly Section 109, of the Railroad Law of this State relating to the use of center-bearing rails, begs leave to report as follows:

After due consideration by the committee and informal report to the executive committee of the association on Aug. 9, 1910, at the City of Albany, N. Y., your committee was further authorized and directed by the executive committee to petition the Public Service Commission of this State for its aid in procuring the repeal or substantial modification of said Section 192.

Under date of Sept. 3, 1910, your committee presented to the Public Service Commission, Second District, the following petition:

"To the Public Service Commission, Second District, State of New York, Albany, N. Y.

"The petition of the undersigned respectfully shows that they are members of and compose a committee duly appointed by the Street Railway Association of the State of New York, in regular convention, assembled at Cooperstown, N. Y., on June 27 and 28, 1910, and that said committee was then and there duly authorized and directed to confer with members of this commission as to the proper interpretation of Section 192, formerly Section 109, of the Railroad Law of this State, relating to the use of center-bearing rails.

"That your petitioners were, after due consideration of the matters involved, on Aug. 9, 1910, at the City of Albany, N. Y., further authorized and directed, by the executive committee of said association and on behalf of said association, to petition the said Public Service Commissions of this State for their aid in procuring the repeal or substantial modification of said Section 192.

"In compliance therewith we beg to suggest as reasons for asking the repeal of said section or its substantial modification the fact that under said section, as it now reads, no choice or discretion as to the kind of rail to be used in streets of any incorporated city or village of this State is vested either in the local authority in said cities or villages or in the Public Service Commissions of this State, but it is, by said section, made mandatory upon all street surface railroad corporations to lay therein 'such grooved or other rail of such shape and so laid as to permit the paving stones to come in close contact with the projection which serves to guide the flange of the car wheel.'

"Your petitioners believe that a fair construction of said section absolutely eliminates the use in such streets of, among others the T-rail, which is now conceded by railroad authorities to be the best design for rail sections, as well as one of the safest and most practicable rails that can be laid, and compels the use of a grooved rail; a rail which it is difficult to keep in line under heavy loads, thus lessening the safety and convenience of passengers, and the use of which rail imposes upon the companies a serious and heavy burden in the matter of keeping such rails free and clear from ice and snow.

"Your petitioners therefore pray the aid of this commission, by suggestion or otherwise, toward the repeal or substantial modification of said section, to the end that either the local authorities of such cities or incorporated villages or the Public Service Commission of the proper district, or both, may have proper and sufficient power, authority and discretion in the premises.

"Respectfully submitted this 3d day of September, 1910.

[Signed]

"W. H. Collins, *Chairman;* M. J. French, B. E. Tilton."

*Report presented at the quarterly meeting of the Street Railway Association of the State of New York held at Syracuse, Dec. 7, 1910.

As a result of this petition a conference was held at Albany on Dec. 5, 1910, with Chairman Stevens, of the Public Service Commission, Second District, at which time the whole subject was thoroughly discussed. The commission appreciates that Section 192, as it now stands, is ambiguous and suggests that the association draft a bill repealing Section 192, and enacting in its place a section substantially as follows:

"No rails for the use of any railroad shall hereafter be laid in any street, highway or other public place used for vehicular traffic except they are of a type which has been approved by the Public Service Commission of the district in which said rails are to be laid as proper for use under the conditions prevailing at such place. The Public Service Commissions shall make and publish from time to time orders in which they shall approve of types of rail for use in such places."

The commission suggests, if such a bill is drafted, that it be submitted to the Public Service Commissions of both districts before being presented to the Legislature. Your committee recommends, therefore, that the association appoint a committee to draft such a bill.

QUARTERLY MEETING OF THE STREET RAILWAY ASSOCIATION OF THE STATE OF NEW YORK

The first quarterly meeting of the year of the Street Railway Association of the State of New York was held Dec. 6 and 7 at the Hotel Onondaga, Syracuse. It began with an informal banquet at the hotel on the evening of Dec. 6.

THE BANQUET

About 75 persons were present at the banquet. After the coffee President Pardee read a letter from C. Loomis Allen expressing regret at being unable to be present at the meeting. President Pardee also stated that two other prominent members of the association would not be able to be in attendance: W. H. Collins, Fonda, who had just sailed for Europe on a short vacation trip, and Capt. J. W. Hinkley, Jr., Poughkeepsie, who was detained by illness. At the suggestion of President Pardee a silent toast was drunk to Messrs. Allen, Collins and Hinkley.

Mr. Pardee then referred to the history of the association, which was founded in 1883, and expressed his high appreciation of the honor accorded him at the June meeting in his election as president of the association. He also referred to the recent legislative inquiry in which the affairs of the association had been subjected to the closest scrutiny and to the fact that at the close of this inquiry the association was shown fairly and squarely to the people of the State as standing, and as having stood for many years, for all that was right.

President Pardee then introduced the first speaker, who was Walter W. Magee, Corporation Counsel of Syracuse. Mr. Magee said that he spoke in behalf of the Mayor of the city, who was detained from the banquet by illness. He welcomed the delegates to the city and hoped that they would hold their meetings often in Syracuse.

The next speaker was J. Stanley Moore, publicity agent of the Beebe Syndicate lines. Mr. Moore mentioned the advantages which interurban electric railways bring both to the city and country. He said that the introduction of these railways is often opposed by the merchants in the villages under the impression that an interurban railway will make shopping more easy in the cities and thus decrease their own business. Mr. Moore said that this was not the case. While the business of the country merchant might change somewhat in character its volume was larger, not smaller, after the interurban railway was built.

Mr. Moore was followed by W. J. Harvie, chief engineer, Syracuse Rapid Transit Company, who spoke for the Engineering Association, and then by Allen C. Fobes, ex-Mayor of Syracuse. Mr. Fobes referred to the cordial relations which had always existed between the public and municipal governments of Syracuse on the one hand and the railways of the city on the other.

John E. Duffy, superintendent, Syracuse Rapid Transit Com-

pany, the next speaker, expressed the hope that all the delegates would find the meeting profitable and instructive. Mr. Duffy was followed by Harold C. Clark, who spoke for the Chamber of Commerce of Syracuse. The final speaker was J. Harry Stedman, who was recalled several times to tell more good stories.

WEDNESDAY MORNING SESSION

President Pardee called the meeting to order at 10:30 a. m. Secretary Reel announced that he had received letters of regret from J. C. Caliseh, L. S. Storrs, W. C. Wood and others.

President Pardee then called for the report of the committee appointed to confer with the Public Service Commission relative to the meaning of the word "eenterbearing" as it appears in the railroad law. The report was read by M. J. Freneh, Utica & Mohawk Valley Railway. It is published elsewhere in this issue.

MEANING OF THE WORD CENTERBEARING

E. S. Fassett, United Traction Company, Albany, thought there were advantages in having the question of type of rail to be used deeided by the loeal authorities and engineers in conference with the company. The object sought when the committee was appointed was to remove the ambiguity as to the term "centerbearing" as used in the law, not to initiate legislation. He doubted the advisability of the association presenting a bill to the Legislature. This was not its purpose, whieh was primarily the discussion of technieal subjects.

Mr. Freneh said that the idea of the eommittee was to work toward standardization in rails. At present T-rails were in use in some places and girder rails in others. The Public Service Commission had admitted that the present law was ambiguous and that it eontradicted itself in several places. It might in the future be eonstrued as requiring girder rails, although this had not been the interpretation placed upon it in the past. He thought that the section should be put in intelligible form.

Mr. Fassett said that it was clear what the section meant, both from its history and its terminology. It meant the eenterbearing rail used in the old horse-car days, consisting of a central tread and a flange on each side. Such a rail was now obsolete and no longer rolled. It had proved a great obstruetion to vehieular travel.

E F. Peck, Seheneetady Railway, said that there had been some controversy in Schenectady in regard to the meaning of the word, and he moved that the report should be referred to the executive committee for approval and aetion. The motion was carried unanimously.

REPORT OF THE COMMITTEE ON TRAFFIC AND TARIFF

The report of the committee on traffic and tariff was then read by B. E. Wilson, New York State Railways. This report is published elsewhere in this issue.

Joseph K. Choate, Otsego & Herkimer Railroad, moved that the report be adopted, that the committee be given the thanks of the association and be continued, and that the appropriation requested be made.

J. M. Campbell, Buffalo, Lockport & Rochester Railway, chairman of the committee, said there was a question whether interurban railways were railroads under the railroad law. He had a case involving exeess fare and the Public Service Commission did not make a definite ruling as to the responsibility of an interurban line, if any, under the elause in the railroad law in regard to this subject. He had made a rearrangement, however, so that the fares charged now were in accordanee with the law, although the company might not be subjeet to the statute. Under the rearranged rates not more than 3 eents a mile, including exeess fare, was eharged. Under seetion 66 of the railroad law a penalty was provided if a steam railroad refused to check baggage. It was a question whether interurban railways were subjeet to this law.

Mr. Fassett said that the only authority that could deeide those questions was the Public Serviee Commission. If the acts as now in force applied to interurban roads some changes should be made so that the law would conform more nearly to the methods of interurban roads.

C. R. Barnes, eleetric railroad inspector of the Public Serviee Commission, Seeond District, said that while he was not a lawyer, he thought that the classification was between steam railroads and street railroads, and that interurban lines were elassified as street railroads.

Mr. Choate said that the committee had done good work and should go into the subject further. The American Railway Association drew a distinction between lines operated by steam and those operated by eleetricity. Many electric lines did the same character of business as steam railroads. The trunk line assoeiation had adopted a different eourse and was now willing to admit electrie railways which interchanged business with steam railroads. When the eommittee eontinued its work further and prepared sample tariffs the various questions would be made elearer.

Mr. Wilson said that the committee had various difficulties in its way. The committee did not like to prepare regulations on points that might be covered by the law.

Mr. Choate thought that the question would be settled by the eonditions prevailing on eaeh road; that is to say, whether or not the road was prepared to earry baggage.

It was then decided by vote to make the appropriation requested and continue the committee.

REPORT OF THE COMMITTEE ON STANDARD FRANCHISES

In the absence of C. Loomis Allen a report of the committee on standard franehises was presented by Mr. Fassett. The eommittee, Mr. Fassett said, had held one meeting. As the importance of a standard form of franchise had been suggested by Commissioner John N. Carlisle, of the Public Service Commission, Second District, in his talk at the last annual meeting of the association, the eommittee thought it would be well to discuss the subject with him and learn his ideas. The committee, therefore, had a meeting with Mr. Carlisle and it was agreed that Ledyard P. Hale, counsel for the eommission, should prepare a tentative franchise. This, when prepared, is to be submitted to the committee and the subjeet will then be eonsidered further. If possible an acceptable standard form will be worked out.

REPORT OF COMMITTEE ON NEW SCHEDULE OF ANNUAL DUES

The next subject was the report of the eommittee on a new schedule of annual dues. H. M. Beardsley, Elmira, read the report, which reeommended the following dues for member companies:

Roads with income up to $50,000 per annum	$10
Roads with income between $50,000 and $100,000 per annum	25
Roads with income between $100,000 and $300,000 per annum	100
Roads with income between $300,000 and $500,000 per annum	150
Roads with income between $500,000 and $1,000,000 per annum	200
Roads with income over $1,000,000	300

President Pardee stated that these rates were a reduetion from those at present in force in the case of all except the smallest companies. The assoeiation now has about $7,200 surplus in its treasury. There was no reason why it should have so much. It had been aeeumulating this surplus at the rate of about $1,000 a year. With the present membership it is estimated that the new schedule will bring in about $4,000 a year. The expenses of the assoeiation are about $5,000 a year, so that with the present membership there should be no necessity for changing the dues for from five to six years. After that a ehange could be made if necessary. Upon motion the new sehedule of dues was adopted.

SHOP ACCOUNTING AND A SYSTEM FOR HANDLING SCRAP MATERIALS

The next subject discussed was shop accounting and a system for handling scrap materials.

W. O. Ingle, New York State Railways, said that the report of the joint eommittee on shop aecounting should prove of value in calling attention to the importance of keeping detail records. The various subdivisions would be useful when eomparisons of costs were wanted. The subdivision of maintenanee of equipment by elasses was good, but it would seem more valuable when it was possible, as on a small system, to go into further detail and keep the eosts of eaeh individual ear. On the larger systems he feared the subdivision would prove too cumbersome. However, it was something which should be

considered and he was sure that it would prove very interesting if accurately kept. If the subdivisions as suggested were to be adopted Mr. Ingle asked if it would not be better to go into further detail in the electrical equipment other than types of motors, showing, for instance, the various individual costs of armature repairs, controller repairs, armature and field coils, pinions, gears and commutators. The same suggestion applied to trucks. Under the subdivision of cars no subdivision was made of the different trucks, nor did any attention seem to be called thereto. In one of the divisions of various types of cars there might be two or three styles or makes of trucks, and it would seem just as important to keep this detail information in order that comparisons of costs of the various types could be furnished to the master mechanic.

It was difficult to keep a true record by various types of cars of brake shoes, which are interchangeable in some cases, and of some of the minor fittings. It was difficult in a good many cases to get the employee to note all these minor items. Mr. Ingle thought that, on this account, where there were a good many types of cars the comparative costs would be more or less inaccurate.

Mr. Ingle also suggested that detail costs of the various fenders were as important as some of the other items. On a road where there was not a very large amount of rolling stock, and it was possible to keep the individual cost of maintaining each car, this would be a very good record. In his company job orders were issued to show the individual costs of painting, and also of overhauling cars

The subdivisions of maintenance of buildings and structures as recommended give enough detail as to the kind of building. Mr. Ingle suggested, however, that under each subdivision the detail cost of each individual building be shown. This could be kept easily and it was very important to have on record. This suggestion also applied to maintenance of power plant equipment, which could be subdivided by types.

Regarding the subdivisions of maintenance of way expense accounting, Mr. Ingle added that the committee had no suggestions to make on standard classification. He thought, however, that the job order system of dividing a city road according to the various streets, allotting to each individual street a job number, designating the track and line on that street was very valuable, especially as the years passed. In the case of an interurban road the division could be made into sections. This gave the engineers of maintenance of way a detail record of the maintenance of the property by accounts and streets, enabling them to make comparisons of the various construction and operating costs. Mr. Ingle's company had followed this system for some years, and he believed that other companies represented were using the same system with just as good results. If a job order was issued at the beginning of each year for each street, it was easy to follow the individual costs and a permanent record was made. In all the accounts it had been found valuable to divide also the labor and material. A monthly report was issued showing the amounts expended on the various jobs for the month and the cumulative period.

One of the most interesting parts of the committee's report was that pertaining to the system for handling scrap material. This and the forms were very good, Mr. Ingle thought. Too often accurate records were not kept of the scrap collected from the various jobs. This should be done daily, weekly or monthly as it was possible in the various departments, instead of being allowed to accumulate until convenient or there was a large enough amount to dispose of. If the scrap was collected regularly and sent to the storeroom or yard, proper credits could be made to the various jobs. To watch the scrap pile was very important on a large road, and it would seem that a systematic record and adoption of some forms like the samples submitted by the committee would do a good deal to eliminate this arbitrary distribution and make a permanent record all the way through.

J. M. Joel, Oneida Railway, said that the method for shop accounting as described in the paper presented at the joint session of the Engineering and Accountants' Associations at Atlantic City in October, was a model for simplicity. The adoption of that or a system similar thereto (depending upon the requirements of those in charge) would permit detailed information which would result in considerable economy to be furnished. The same principles as those embodied in the method described by the committee underlay the job order system installed on the Syracuse Rapid Transit, Utica & Mohawk Valley and Oneida Railway properties on Jan. 1, 1910. This system was an elaboration of that outlined by the joint committee. For its essential elements indebtedness was acknowledged to the New York State Railways at Rochester.

Under the shop accounting system in effect on these properties job numbers were given to all cars shopped, with the exception of those on which the cost of repairs would not exceed $5.00. Items of this character were charged to a so-called standing job number covering a maintenance account, which was carried throughout the year.

Mr. Joel described the system. The chief engineer forwarded to the assistant engineer an authorization for the performance of a certain job prepared in the form of a memorandum in triplicate. This read, "Please do the following work; charge labor and material to job No. ————." A description was given of the work ordered. This memorandum was retained by the assistant engineer, a copy was forwarded to the foreman under whose charge the work was to be done, and the remaining copy was sent to the job order clerk in the auditor's office. Upon the return of the memorandum by the foreman, together with a detailed description of the work done, which was retained as a department record, the assistant engineer's copy was forwarded to the auditor's office, accompanied by a certificate of completion for filing purposes. The job was then considered closed and no further charges were made against this job number.

Mr. Joel said that a car sent to the shop for repairs to cost in excess of $5.00 was represented by what was known as a special job number, and in the event of a general overhaul the letters A, B, C, D, E, F, G and H were affixed to the number. These letters denoted, in the order named, repairs to body, trucks, air equipment, electrical equipment, strip and trim, preparatory work, paint and varnish and cleaning brass. The job number and account charged were shown on the requisition under which the material was drawn from the storeroom. After notation of the number of the bin from which the required material had been drawn, the requisition was passed to the job order clerk, by whom the job number and account charged was verified. He, in turn, forwarded the requisition to the storeroom clerk, who entered the price and extension, making the proper credit upon the stock sheet. He then assembled all the requisitions received that day and posted the total by accounts on his distribution sheet. Requisitions were then forwarded to the auditor's office, where the clerk in charge of these records verified the total as noted by the storeroom record clerk, sorted the requisitions according to job numbers and posted daily in his record under the various job headings.

Aside from the name and date, employees were required to show upon their daily time slip, Mr. Joel said, simply the job number or numbers and amount of time they were engaged upon each job. These were verified by the job order clerk and the number of the account to be charged was posted by him.

A monthly report was prepared and copies were forwarded to those interested. This showed, Mr. Joel stated, the cost of labor performed and the material used on the various shop job orders during the month and cumulative period, together with a detail of expenditures by accounts in accordance with the classification and information as to the cost of maintenance for each of the various types of cars, as described in the method presented by the committee.

With the exception of pieces of special work and railroad crossings, all track was divided into as many sections as were found necessary by the engineers. To each section a number was given. Each piece of special work or crossing with steam and street railroads was furnished with a separate job number regardless of the section in which it was located.

Mr. Joel said that upon advice from the department which did the work it was the duty of the job order clerk to give the job a number, enter with a brief description, note the account or accounts to be charged, and notify the heads of those departments that might be called upon to share in this work, who would also refer to this job number in requisitions for material and slips covering labor performed.

Each track foreman prepared a sheet covering the work of the men in his gang. These sheets were sent daily to the timekeeper, who posted the time and forwarded the sheets to the engineer's office for approval. From there the sheets were sent to the job order clerk at the shop, by whom the postings were verified and forwarded to the auditor's office. The same system was used with regard to overhead work.

A monthly report covering maintenance of track and overhead structures, as well as additions and betterments thereto (for the month and cumulative period), was prepared. Copies were furnished to the officials under whose jurisdiction the work was done, who were familiar with the jobs represented by the numbers shown.

Mr. Joel concluded that this information had proved to be extremely valuable in the determination of costs, not only of the jobs performed but also of those proposed. It should be of value for comparative purposes and tended to effect economical operation in the mechanical and electrical departments as well as the department of ways and structures.

F. E. Belleville, Schenectady Railway, said that the question as to the form of the subdivision of accounts would not admit of much general discussion. This matter was one that was governed largely by local conditions, inasmuch as the amount of information necessary to be furnished as a guide to economical maintenance and operation depended largely upon the desires of the heads of the various departments interested. A subdivision which would entirely satisfy one engineer would not answer the requirements of another. A system, to be useful, should be simple but comprehensive, and all unnecessary compilation of figures should be avoided. A too elaborate system would be confusing and, by its own complexity, would destroy the object for which it was intended. A uniform system of subdivision of shop accounts would be very desirable, as it would permit the various roads to make comparisons of costs and maintenance of different types of equipment

Mr. Belleville added that the primary accounts covering maintenance of way and structures apparently furnished sufficient information in themselves, and no subdivision was recommended by the committee.

The classification of accounts promulgated by the Public Service Commission in the State of New York covered, to a large extent, the subdivision of accounts recommended for operation of electric railway power plants. For example Mr. Belleville referred to the classification adopted as standard by the American Electric Railway Accountants' Association, which has the account "maintenance of power plant equipment." In the Public Service Commission classification this expense is covered by the following accounts:

Repairs of furnaces, boilers and accessories.
Repairs of steam engines.
Repairs of hydraulic power plant.
Repairs of gas power equipment.
Repairs of power plant electrical equipment.
Repairs of miscellaneous power plant equipment.

Under the account "power plant employees" the Public Service Commission classification provided for a subdivision of labor similar to that embodied in the committee report as follows:

(a) Power plant superintendence and care.
(b) Boiler-room labor.
(c) Producer labor.
(d) Engine labor.
(e) Electrical labor.

Therefore the question, Mr. Belleville said, was simply what additional information was desirable in connection with the maintenance of equipment.

It was stated by Mr. Belleville that the shop practice of the Schenectady Railway resembled in many respects the system outlined in the report of the joint committee, the forms in use being slightly different and not so numerous. All employees in the shop were required to fill out a daily time ticket showing car number, description of work, and time on each particular item. These time tickets were approved by the foreman or assistant, and forwarded to the timekeeper, who entered them on the payroll sheets and prepared a statement of distribution. Material was drawn from the storeroom only upon a regular order signed by the foreman or assistant.

For ordinary repairs of a general nature no shop order system was in use at present on the Schenectady Railway. When a car was received in the shop for painting, annual overhauling, or any special work, an estimate of the cost of such work was prepared and forwarded to the general manager for his approval. Upon approval the work order was issued by the accounting department. The shop order showed a description of work to be done, together with the estimated cost and proper distribution. When the work was completed the work order was dated and signed by the master mechanic or other person in charge and returned to the accounting department. Work performed for any other department or foreign company was also covered by these work orders.

Mr. Belleville said that heavy scrap material, such as rails, special work, plates, etc., was sent, when collected, to the storage yard. Copper and brass were kept in bins under lock and key, under the supervision of the head of the department. Sales were made when, in the judgment of the purchasing agent, the best prices could be obtained. Care was taken to separate the various classes of scrap so as to avoid low returns on mixed scrap. Upon the sale of any scrap material the storekeeper furnished the accounting department, through the purchasing agent, with a statement of scrap sent out and all other necessary information. The proper accounts were then credited with the proceeds of the sales

W. C. Austin, auditor, Otsego & Herkimer Railroad, considered that detail records of the kind described might be very desirable on a large road but that they were hardly practicable on small roads.

W. J. Harvie, chief engineer, Syracuse Rapid Transit Company, said that there were two principal reasons for the use of the job order system. The first was to enable the management to know the amount of money which had been spent and where it had been spent, so as to be able to determine whether similar expenditure next year would be advisable. The second reason was to learn whether the results being secured were economical. Any job-order system was desirable in so far as it accomplished these results. Any system also should be so arranged that a part of it could be omitted if necesary; that is to say, so that only as much of it need be used as was desirable.

Mr. French, Utica, said that properly to credit scrap material required, among other things, a closed yard, with one man in complete charge of the yard and scales. It was impossible in any other way to know exactly the material taken in and taken out. Thus a "90-lb." rail might by wear be reduced to weigh only 84 lb. per yard and should be charged in and out only at that weight. Again, material taken from scrap was often used over again, and the scrap account should be properly credited with this material.

J. M. Campbell, Buffalo, Lockport & Rochester Railway, asked Mr. French whether he waited until a carload of scrap accumulated before crediting it or whether he credited it at the time it was passed to scrap. Mr. French replied that he followed the latter course.

H. M. Beardsley, Elmira, said that he had used the job-order system for seven years and found it very useful.

H. M. Butler, purchasing agent, New York State Railways, Rochester, said that on that road all scrap was weighed in and weighed out and these two records were compared.

E. F. Peck, Schenectady, said that a number of years ago the Schenectady Railway engaged an expert to prepare for its use a system of shop orders. An elaborate system, with

cards and orders of a great variety of colors, was introduced, but the system was so complicated and burdensome that it had been discontinued.

Martin Schreiber, engineer maintenance of way, Public Service Railway, Newark, N. J., said that the job order system was very good if the reports were made promptly, but it could easily be carried too far and into too great detail. Then it became burdensome. It was far more important to know the total cost than the detail cost. Thus, unless one was acquainted with the local conditions under which street paving was laid the detailed cost of pavement construction was not very useful; but the total cost was very necessary.

Mr. French thought that the way engineer ought not to have to be concerned with the accounting details of the way accounts, but that they should be handled entirely by the accounting department.

P. J. Honold, purchasing agent, Syracuse Rapid Transit Company, said that the best way to give an account or job order proper accounting credit for scrap was to do so at the time the material was taken off the car. His company had a contract for the sale of its scrap iron, on a sliding scale, based upon the weekly quotations in the *Iron Age* for bessemer pig. It has a similar scale for the sale of its scrap copper and brass, based on the quotations for lake copper. Owing to fluctuations in price, there is some difference between the prices of the same material when charged in and when charged out, but the aggregate amount of credit or debit from these changes in price has not been large.

President Pardee referred to the recent hearings before the Interstate Commerce Commission on the proposed change in freight rates and to the testimony offered by one witness for the shippers that the steam railroads could save a large sum of money every year by the application in railroad work of methods used by manufacturing companies. Mr. Pardee understood that the saving claimed to be possible was principally in shop accounting and methods of handling scrap material, and while the testimony at Washington related only to the steam railroads, it emphasized the importance of the subject they had been considering.

W. J. Harvie, Syracuse, thought that the distribution of the charges could best be made by the department making the expenditure and not by the auditing department. The clerical work for carrying out the accounting for the job-order system on the three roads with which he was connected, namely, the Syracuse Rapid Transit Company, the Utica & Mohawk Valley Railway, and the Oneida Railway, cost in the aggregate about $150 a month. He thought this money well spent.

TRAINING OF TRANSPORTATION EMPLOYEES

A paper by W. H. Collins, Fonda, Johnstown & Gloversville Railroad, was read, in the absence of Mr. Collins on account of sickness, by C. Gordon Reel, secretary of the association. This paper is published elsewhere.

E. E. Strong, chief instructor, Syracuse Rapid Transit Railway, opened the discussion. Mr. Strong's paper is published elsewhere in this issue.

T. C. Cherry, Utica & Mohawk Valley Railway, suggested that applicants should be sent to the claim agent for instruction in reference to claims and accidents before beginning work. He said that it was pitiable to see a new conductor on a car trying to understand and meet the requests of passengers for transfers. The follow-up systems were weak. During the period of two weeks an attempt was made to crowd in all the information that a new employee needed to have. A great many roads would do well to employ regularly "follow-up" conductors and motormen for new employees.

Mr. Cherry said that upon the introduction recently of a new system of transfers it was decided that the best explanation of the changes could be made to the employees by the use of a stereopticon. The men were gathered in a dark room and instructors pointed out the changes as the photographs of the new transfers were reproduced. This method had been found to be a great success.

W. C. Callaghan, New York State Railways, Rochester, thought that the best foundation methods of instruction had not yet been evolved. It would help to keep men if they learned that their positions were as honorable as those of a bank clerk or a salesman in a store. Work should be done with the old men in order to prevent them from spreading adverse reports about the service.

J. E. Duffy, Syracuse Rapid Transit Railway, said that the papers of Mr. Collins and Mr. Strong brought out the importance of teaching the men that the employment was honorable. Many new men left the service because some old employees expressed dissatisfaction with the conditions of employment. The problem of keeping good men was very serious in a city with diversified industries. The probationary period was the discouraging feature. Though the employment was a healthful one, steady work and wages could not be promised at first. It was discouraging to a new employee with a family to wait from a year to a year and a half for a steady run. He did not know how to settle the problem unless some provision was made for the man and his family during the period of probation. Men in a regular instruction department were the best to impress the duties of the work upon new employees. It was essential to have employees trained carefully and properly, but it was difficult for the smaller roads to provide courses of instruction that would accomplish this end.

Charles H. Smith, United Traction Company of Albany, said that about 25 per cent of the transportation employees left the service each year. He thought that the companies asked too much of the new men. The men were obliged to spend three weeks without pay in learning their duties, providing uniforms at a cost of about $30 apiece, and were then placed on the extra list and reported three times a day without any certainty of getting work. Dissatisfied men in the service were not doing good for themselves or for the companies.

Mr. Callaghan asked whether the questions used in Syracuse were in printed form and were used in all cases or whether they were varied for different men.

Mr. Strong said that all the questions were in printed form and that some of them were so worded that they could be answered by "yes" or "no," while for others the rules had to be repeated.

Mr. Duffy said that a booklet of instructions had been prepared recently for the Syracuse motormen. Copies are given to the student motormen with copies of the rule book.

John H. Cain, Buffalo, Lockport & Rochester Railway, said that he had not had the same difficulty on the interurban line as on a street railway. He made it an invariable rule to employ experienced men and in this way secured much better results. The applicant was accepted on his record with other lines and was sent out with an experienced motorman to learn the road. He thought that very few interurban lines paid applicants for employment for that work. Better results would be secured, he believed, if all student trainmen were paid a fixed wage.

C. H. Armatage, Schenectady Railway, said that about two years ago the company started the plan of paying students $15 for 21 days' work and it has led to good results. The efficiency of motormen had been increased at least 100 per cent.

John H. Pardee, the president, asked that copies of the booklet of instructions and written examination blanks of the Syracuse company be mailed to each company in the association.

Adjournment was then taken for lunch, which was served in the Hotel Onondaga.

AFTERNOON SESSION

When the afternoon session was called to order E. F. Peck, Schenectady Railway, said that the New York telephone companies had been making propositions for the joint use of poles in every city. Under the forms of contracts offered, the telephone companies would become automatically in time joint owners with railways of the poles involved. He suggested that a committee be appointed to prepare a standard form of contract for use in these cases.

Mr. Barnes, Public Service Commission, Second District, said that the commission would call a conference of representatives of electric light, telephone and railway companies to consider this subject.

Mr. Choate said that there were a good many cases in which it would not be wise to arrange for a joint use of poles. He suggested that a majority of the committee be electrical engineers and that the committee report to the executive committee of the association. The executive committee could then appoint a committee to attend the proposed conference to be called by the commission.

A resolution embodying these suggestions was passed.

ACTION ON INSURANCE

E. J. Cook, New York State Railways, Rochester, said that he desired to offer a resolution on the subject of insurance and moved its passage. The resolution was as follows:

"Resolved, That the Street Railway Association of the State of New York appoint Henry N. Staats its insurance expert, with authority to employ such assistants as may be necessary to advise the members of the association or such of them as may desire to avail themselves of his services on all matters relating to fire insurance, including forms of policies, appraisals of property, schedule of rates, the construction and improvement of property, with a view to the lessening of hazard by fire and the adjustment of losses consequent upon fire, and to represent member companies upon request before inspection and rating bureaus or other bodies having to do with fire insurance. And:

"The expense of the insurance expert to be paid by such member companies of this association as may elect to employ him, and this item of expense be based on the gross receipts as shown in the last annual statement of each of said companies.

"BASIS FOR PAYMENT

"The companies having gross receipts of $500,000 or less will pay $50 per year, payable quarterly, plus railway fare.

"The companies having more than $500,000 gross receipts will pay $10 on each $100,000 of gross receipts, payable quarterly, plus railway fare."

Mr. Cook, in speaking of the resolution, said that he thought all of the companies, particularly some of the smaller companies, would be interested in participating in the arrangement. His experience had led him to value highly the expert services of Mr. Staats and the passage of the resolution would enable the companies generally to avail themselves of the same opportunity.

Mr. Choate said that the subject of insurance was one with which the smaller companies particularly had had the greatest difficulty. The smaller companies did not know how to proceed systematically so as to obtain a reduction in rates.

Mr. Fassett said that the passage of the resolution entailed no expense or obligation upon the association. It was the duty of the association to do anything that it could to give the smaller companies the benefit of experience of this kind. With a full understanding of the plan, he seconded the motion for the passage of the resolution.

Mr. Pardee called Mr. Choate to the chair, and, speaking from the floor, said that he considered the subject of insurance last year. It was possible to employ an expert in almost all lines of business who was not employed by anyone else; but, excepting Mr. Staats, he did not know of a single insurance expert in the country that was not paid by the other side.

M. Badgero, Syracuse & Suburban Railroad, asked a question about the expense, and Mr. Cook said that it was the idea that the total work to be done could be carried out upon the basis of payment provided in the resolution. The plan would enable Mr. Staats to get on the ground and give advice. Inspection or sprinkling plans could be prepared in his office.

The resolution offered by Mr. Cook was then passed.

Mr. Staats expressed his appreciation of the action of the association. He said that with the permission of President Arthur W. Brady, of the American Electric Railway Association, and of Henry J. Davies, secretary of the Cleveland Railway, he would read the remarks made by Mr. Davies on his report as chairman of the committee on insurance, presented at the Atlantic City convention in October. Mr. Davies spoke as follows:

"As I presume most of you know, the old-line or stock insurance companies have been, for two years at least, planning or suggesting the appointment, from among their own representatives, of a central rating and inspection bureau, as they call it, in the interest, they say, of the traction companies. Your insurance committee has welcomed the appointment of such a committee or bureau, has endeavored to get in touch and in conference with committees that have been appointed by the insurance companies, upon that subject, with what success the correspondence I have read indicates. There is not yet an inspection bureau to which we can go with questions as to construction or as to rates of insurance, except the local bureau in each city or community.

"If such a bureau were appointed or established by the stock companies, it would act for the stock companies. They say they are our friends, and they are; just as the dealers in cars are our friends; just as the dealers in rails and supplies are our friends. And we are their friends; in the same way that we are friends of the car builders, the rail makers and the supply dealers. They cannot afford not to be our friends. We cannot afford not to be their friends. But we do not want them to conduct both sides of the negotiation. We ought to have our own representatives, to meet their representatives, on any question that may come up between any member of the association and the insurance companies. We ought to have a representative to raise questions, without waiting for them to come up. We can meet them to better advantage if we have our own expert.

"That expert ought to be a man of experience and of high character, of course. He ought to have no financial interests in any insurance company organized for profit. He ought not to receive commissions, directly or indirectly, nor any compensation, in any way, from any insurance company. His compensation ought to come from the traction companies, every cent of it. And his work ought to be for them, and for them only.

"The establishment of such a bureau or committee as the stock companies have proposed for the past two years would be of advantage to the traction companies, I admit. It should be of advantage to them if only because it will teach the stock companies the desirability of traction risks. Street railway companies had a bad reputation among insurance companies for many years. They had many losses by fire. A street railway fire was apt to be a very disastrous fire. But our reputation with the insurance companies was worse than we deserved. Bad as our experience had been, it did not justify the rates that were charged. Rates have been vastly reduced since that time; but even then, five years ago, statistics gathered from more than 400 companies indicated that the cost to the insurance companies of fires in traction properties was about 30 per cent only of the premium paid; it comes nearer to being 100 per cent now, not because losses have been greater but because rates have been reduced, by reason of the work of this committee and this association.

"Such a bureau would be helpful to the traction companies, but it will be more helpful to us if we may have representation upon it, so that we may have the knowledge that the insurance companies will gather by way of statistics and otherwise, as to the traction companies' properties, as to fire losses on traction properties and as to rates for the insurance of street railway properties.

"If we cannot have a representative as a member of that central bureau, then we ought to have an expert as well qualified as the members of that bureau, to represent us before it, and to educate the insurance companies upon the subject of our risks.

"Rates have been reduced, as I said before, greatly reduced, but they are still too high on many properties. They have

been reduced partly because the properties have been improved. Street railway properties are better protected than they were five years ago; they are better risks; they are less hazardous, but there is still room for improvement. There ought to be fewer fires than there are. Our properties ought to be so well protected that a $5,000 fire in a car house would be a disgrace to any manager—a scandal; and, after a few years more of education in construction and protection of buildings, I should be willing to see it made a crime. There should be no $5,000 fires. If there were no such fires as that rates would be very low. I hope you will so improve and protect your risks that some day the chairman of your insurance committee may appear before you at one of your conventions and say to you. 'there has not been a single fire in a traction property in the past year, keep up the good work'; and, at the same time, say to our friends, the able and affable agents and other representatives of the insurance companies, 'there has not been a single fire in a traction property within a year. But bring down your high rates.'

"I want you to put yourselves in such a position that you can substantially dictate your rates. I want you to know what insurance costs. You can do that through your own inspection bureau, or your own insurance expert, better than through any bureau established by the insurance companies.

"I do not know what the total value of the burnable properties of the traction companies represented in this association is, but surely it is many millions.

"Our committee estimated in one of its reports that the capitalization of the traction companies was $4,000,000,000, and that from 15 per cent to 25 per cent of that capitalization represented physical property that should be insured. Twenty-five thousand dollars is a very small fraction of 1 per cent not of the value of the burnable property, but of the premiums that are paid upon the properties insured. This amount would increase your dues. I don't care if it doubles them; the service and the results will be cheap at the price. You have all profited by the work of this committee, and by the work of the individual companies that have been active in this insurance agitation, and that have borne the expense of it. You will profit in the future by the work of the committee, and by the work of this expert, should he be appointed or employed; and you should each pay a part of its cost. And you should not be niggardly in your appropriation. The expense of such a bureau of engineers and trained inspectors as should be established might well be more than $25,000. You will save a great many times that amount."

REPORT OF WAY COMMITTEE

Martin Schreiber, Public Service Railway, discussed the report of the way committee of the American Electric Railway Engineering Association, presented at the Atlantic City convention. An abstract of the discussion of Mr. Schreiber is published elsewhere.

Supplementing his written remarks, Mr. Schreiber said that analysis of the ingot often did not show a correct analysis of the rail. A modification of the drop test had been suggested. Another test was a test for carbon. A scleroscope had been invented to determine the hardness of the rail. When dropped this would rebound a little on a soft piece or more on a hard piece. By comparison of the heights of the rebound the degree of hardness could be determined. Rail would often fail by segregation of the carbon. There might be a variation of as much as 10 points between the head and flange on analysis. In the future still further tests would probably be developed.

M. J. French, Utica & Mohawk Valley Railway, discussed the maintenance of way report. The synopsis of Mr. French is published elsewhere. Mr. French, supplementing his written discussion, said that the American Railway Association 100-lb. T-rails, types A and B, did not exactly fit all conditions encountered by electric railways. He was therefore going to speak a few words in favor of the A. S. C. E. section. He had failed to find that any of the steel companies had rolled American Railway Association standard sections for electric lines, unless such sections had been bought for steam roads with electrified mileage. Some electric roads had been built entirely with A. S. C. E. type of rail. He thought that the association should recommend that the American Electric Railway Association include the A. S. C. E. sections among its T-rails.

Mr. French suggested that the only way in which the steel companies could be induced to roll the heavy 7-in. T-rail was to give orders for 3,000 tons. The rails could be rolled if the companies would pool their orders. It was the duty of the association to start a movement in this direction.

W. J. Harvie, Utica & Mohawk Valley Railway, discussed the report of the equipment committee at the Atlantic City convention. His remarks appear elsewhere in this issue. Referring then to the report of the way committee he said that when the subject of "economical maintenance" had been originally suggested it had been referred to several committees. The association hoped that each year a few definite suggestions would be secured to reduce the cost of operation. Several of the committees had had to eliminate this subject because of inability to get satisfactory results. The way committee had made a number of valuable suggestions along these lines, however, last year, and this coming year even better results were expected because it as yet had received only two assignments. One was to draw up a set of rules for the government of the way department. The other was the necessary shop facilities for the way department. Mr. Harvie added that he was glad that Mr. French had brought up the subject of the A. S. C. E. standard. He suggested that Mr. French write to the committee on standards of the American Electric Railway Engineering Association. He said that if any executive official whose signature was asked on a letter ballot approved any proposition without satisfying himself, by investigation, either personally or through his engineering representative, that the proposition was sound, the value of the method was absolutely destroyed.

Mr. Schreiber thought that the suggestion that the standardization committee consider the A. S. C. E. rail section was a very timely one.

COMMITTEE ON EQUIPMENT REPORT

J. P. Barnes, Oneida Railway, discussed the report of the committee on equipment presented at the Atlantic City convention. He said:

"In reading the report of the committee on equipment the strongest impression gained is, perhaps, of the remarkable completeness and clarity of that portion of the report which deals with car-body design. The importance of securing the maximum degree of lightness, compatible with strength and stiffness of the car-body, can scarcely be overestimated. This feature has a direct and important bearing on the economy of operation of the car which, however, will be balanced to some extent by the probable higher first cost and possible increased maintenance cost of the lighter car-body.

"The committee favors the comparison of car weights on a basis of pounds per square foot rather than pounds per passenger seat. In the comparison cited by the committee between cars of similar type, viz.: a 44-passenger and a 60-passenger semi-convertible, the comparisons by the two methods differ by only 3.6 per cent. Here, then, the comparison on the basis of pounds per passenger seat gives nearly the same results as does that by pounds per square foot, while the earning capacity and ability to care for traffic will depend much more nearly on the seating capacity than on the number of square feet of car floor. In comparing open cars with box cars the pounds per square foot would, undoubtedly, give a better idea of the relative massiveness of the two cars than would the pounds per passenger seat, but the choice of a car as between

open and closed type would be governed far more by service conditions than by consideration of power consumption or cost to operate. It would seem, then, that the passenger seat, which is the basis of so much operating data as seat-miles, etc., would give quite as fair results in comparison of cars of the same or nearly the same general type and would at the same time avoid the introduction of two units of comparison with the resulting tendency to confusion.

"The committee's report develops a strong case for the two-motor as opposed to the four-motor equipment without, however, touching on the decreased maintenance cost of the two-motor equipment, resulting from the number of bearings, commutators, clearances, etc., to be inspected and cared for.

"Passing to the matter of a gage for mounting both steel and chilled wheels, it would seem that a gage designed to bear on the wheel contour at the gage line only would be better adapted for all-around work than is the gage proposed which follows the entire contour of the fire section. A gage designed to bear on the gage line only may be used with equal facility on old and new wheels, even those with thick flanges and, moreover, may be used as a check gage by the car inspector, thus doing away with the necessity for two styles of gages.

"Under gears and pinions the committee emphasizes the desirability of high-grade or special treated steel for gears and pinions. As an instance of the superior life of such gears and pinions, it is interesting to note the performance of two pairs of specially treated gears and pinions on 40 horsepower motors in suburban service, double end equipment. After running nearly 80,000 miles (79,750 exactly) the gears showed an average wear at the pitch line of .020 in., while the pinions showed .070 in wear. This is total wear on both sides of the teeth and is taken from measurements on four teeth of each gear and pinion. The life of ordinary untreated gears in this service is about 165,000 miles, and of pinion about 25,000 miles. These pinions have then made about three times the usual life in this service and are only about one-third worn out, while the gears have made nearly one-half the usual life and are about one-tenth worn out.

"In considering the wear of gears and pinions too much importanee ean hardly be attached to the matter of bearing wear and consequent recession from proper meshing of the gear and pinion teeth. This affects not only the life of the gears and pinions, but also the noise attending their operation. It is a practical impossibility to re-mesh gears and pinions that have worn very far under conditions of too much play because of the resultant noisy operation. Thus the relieving of badly worn bearings often practically necessitates the scrapping of gears and pinions that are not, strictly speaking, worn out. Again, if a pinion is worn out under conditions of extreme bearing play, the gear tooth is likely to be so far deformed that a new pinion will not mesh with it without producing extremely noisy operation. From these considerations, it appears that the choice of bearing metals and lubrication for motor bearings is of the utmost importance in order that the best results may be obtained with gears and pinions of whatever type. It is interesting to note the marked superiority of the modern types of motors in this respect. With identical materials, both bearing and lubricating, with identical methods of installation and inspection and in the same service the average life of gears with modern types of motor is 440 per cent that with the older types."

The Atlantic City reports were also discussed briefly by E. P. Roundey, Syracuse Rapid Transit Railway; R. P. Leavitt, Albany & Southern Railroad, and F. A. Bagg, Fonda, Johnstown & Gloversville Railroad.

President Pardee announced the appointment of the following committee to consider the subject of the joint use of poles, in accordance with the resolution offered by Mr. Peek: W. J. Harvie, Utica & Mohawk Valley Railway; B. Penoyer, Schenectady Railway; C. S. Stanton, Otsego & Herkimer Railroad; C. L. Cadle, New York State Railways, Rochester; R. P. Leavitt, Albany & Southern Railroad.

The meeting adjourned at 3:30 p. m.

GEORGE WESTINGHOUSE ON STANDARDS FOR RAILWAY ELECTRIFICATION

In his presidential address read at the annual meeting of the American Society of Mechanical Engineers in New York City on Dec. 6 George Westinghouse referred again to the necessity of adopting some standards for the essential requirements of future electrification of railways. He prefaced his remarks by saying that his address before the joint meeting of the American Society of Mechanical Engineers and the British Institute of Mechanical Engineers, held in London last July, had been misinterpreted in some quarters as specifically recommending the adoption of one particular system. He had recommended merely a uniform supply of electricity, uniform location for the working conductors and uniform control apparatus. Continuing he said: "The selection of a system embodying these fundamental requirements would leave to manufacturers and inventors the same latitude for development and improvement in the construction of railway electrical machinery as has always existed with reference to steam-operated railways, where the fundamental requirements were: A standard gage of track, standard couplings of cars and standard braking and signaling apparatus. To appreciate this observation one has only to contrast the locomotive of 20 years ago with the mammoth Mallet compound locomotives which are now being introduced, or the freight car of 10 tons capacity with the modern steel cars of 50 tons capacity. I cannot impress too strongly the great importance of bringing about such an early decision in regard to the standards to be adopted in the electrification of railways as will insure to the traveling public the benefit of this method of transportation at the earliest possible moment and on an advantageous basis to the railways, which will be required, even under the most favorable circumstances, to expend vast sums of money in changing from steam to electric operation.

ANNUAL MEETING OF PENNSYLVANIA ASSOCIATION

The annual meeting of the Pennsylvania Street Railway Association was held in Harrisburg, Pa., on Dec. 1, 1910. Fifteen of 44 companies which are members of the association were represented. Two new companies joined the association in 1910. The establishment of an employment bureau and the introduction of a card index system for technical men seeking employment at the headquarters of the association were considered. The executive committee of the association has been authorized to follow legislation affecting electric railways at the coming session of the Pennsylvania Legislature. Following the meeting, the delegates were entertained at luncheon at the Harrisburg Club

The following officers were elected at the meeting: President, Charles O. Kruger, president of the Philadelphia Rapid Transit Company; vice-president, E. H. Davis, general manager of the Williamsport Passenger Railway; treasurer, W. H. Lanius, president of the Hanover & McSherrystown Street Railway; secretary, H. M. Stine, Harrisburg, re-elected. The following executive committee was appointed by President Kruger: Frank B. Musser, president of the Central Pennsylvania Traction Company; H. R. Fehr, president of the Northampton Traction Company; Walter A. Rigg, general manager of the United Traction Company, Reading, and R. P. Stevens, president of the Lehigh Valley Transit Company, of Allentown.

According to a consular report, Zahleh, which has a population of 35,000 and is 30 miles distant from Beirut, Syria, is negotiating with several individuals who desire to establish an electric railway, lighting and telephone system in that city. Under the terms of the concession, 17⅝ miles of track must be built at once but authority is given to build 5½ miles in all. The concession will serve for 60 years. It is proposed to take power from a new hydroelectric plant. American manufacturers who are interested should apply to the Bureau of Manufactures, Washington, D. C., regarding the concessionaires.

News of Electric Railways

Program of Annual Meeting of Central Electric Accounting Conference

The following program has been announced for the annual meeting of the Central Electric Accounting Conference, which is to be held at the office of the Mahoning & Shenango Railway & Light Company, Youngstown, Ohio, on Dec. 10, 1910:

MORNING SESSION, 10:30 A. M.

President's annual address.
Report of executive committee.
Report of secretary-treasurer.
Report of committee on uniform comparative statements. S. C. Rogers, chairman.
Paper, "Shop Accounts," by A. J. Lamb, Toledo Railways & Light Company.
Adjourn for lunch. The members of the conference will be the guests at luncheon of the Mahoning & Shenango Railway & Light Company.

AFTERNOON SESSION, 2:30 P. M.

Illustrated paper, "Stores Accounts," by A. F. Elkins, auditor, Columbus, Delaware & Marion Railway.
New business.
Election of officers.
Adjournment.

Cleveland Traction Situation

The trial period of eight months provided by the Tayler grant for the operation of the Cleveland (Ohio) Railway at a 3-cent fare plus 1 cent for a transfer was completed on Nov. 30, 1910. As the interest fund is approximately $550,000, or about $50,000 more than the amount provided in the beginning, the present rate of fare will be continued for at least three months.

J. J. Stanley, president of the Cleveland Railway, stated on Dec. 2, 1910, that the company had accomplished largely what was expected of it in the way of returns when the Tayler grant was accepted, considering the facilities. This, however, has not induced people to purchase the stock, which has been on the market for months. Mr. Stanley is of the opinion that bonds would not sell much more readily, nor does he believe that an increase in the rate of fare would improve the demand for the securities. People want a larger return on their money than 6 per cent when they invest in stock of this kind. Only 40 or 50 shares of stock of the company changed hands a day on the exchange, whereas with a corporation like the Cleveland Railway the transactions should be between 400 and 500 shares a day under normal conditions. The stock declined to 95⅛ on Dec. 1, 1910, following the expiration of the trial period.

Mr. Stanley has been working to devise means to purchase additional cars and Mayor Baehr and Street Railway Commissioner Dahl have also been considering the matter, but they have as yet been unable to suggest any means to secure the necessary funds. The Mayor has instructed Mr. Dahl to inform the company that some way must be found to finance the purchase of cars. The maintenance and renewal fund and the interest fund show a surplus, but neither can be used for the purchase of equipment. The operating fund has shown deficits for September, 1910, and October, 1910, or since the wages of the motormen and conductors were advanced. Each fund must care for the obligations of its own department. As matters stand all surpluses in the maintenance account will have to be applied to redeem funds borrowed for that account.

It is said that an effort will be made at the coming session of the Legislature to give cities the right to own street railways and subways.

A movement has been started in Cleveland to erect a monument to the memory of the late Judge R. W. Tayler, the fund to be secured by popular subscription.

On the evening of Dec. 5, 1910, a resolution was adopted by the City Council instructing the street railway committee to investigate the street railway situation with a view to securing better service. Several councilmen intimated that pressure has been brought to bear on the public to create sentiment for a new grant. Councilmen wanted it understood that it was not the purpose of the investigation to overthrow the Tayler grant.

Previous to the meeting of the Council the directors of the Cleveland Railway discussed plans for financing improvements and purchasing additional cars. Nothing regarding the conference was made public. The directors declared a quarterly dividend of 1½ per cent, payable Jan. 3, 1911.

Indictment Returned Against Offenders During Columbus Strike

In its report, filed on Dec. 2, 1910, the grand jury at Columbus, Ohio, returned indictments against Alfred N. Strader, David Davis and Thomas Cranmer, on the charge of dynamiting street cars during the recent strike of the employees of the Columbus Railway & Light Company. Strader is charged with placing dynamite on the tracks of the company for pay. Davis is accused of having dynamite in his possession for illegal purposes. Morris Cranmer, who was the financial secretary of the local street railway men's union, is accused of paying Strader to place the dynamite on the tracks. Cranmer was held to the grand jury on bond of $5,000. Davis and Cranmer are also charged in the indictments with aiding Strader to escape.

The trial of Gerald O'Leary, alias George W. Brady, was continued last week. He is accused of firing shots which wounded two women and a girl. On Nov. 29, 1910, O'Leary took the stand and denied that he fired a shot during the strike. The defense rested its case on Nov. 30, 1910, but Mayor Marshall was called in rebuttal on Dec. 1, 1910.

In its final report on the strike the grand jury criticised the policemen who refused to obey the orders of the Chief of Police and the Mayor to ride on the cars and protect passengers and crews, and censured the officials of the company for not using vigorous measures at the outset to suppress lawlessness.

New York Railroad Club Reunion.—The fourth annual Christmas entertainment and social reunion of the New York Railroad Club will be held at 29 West Thirty-ninth Street, New York, N. Y., on Friday evening, Dec. 16, 1910, after a brief business session. The program will include a vaudeville entertainment and supper.

Meeting of Executive Committee of Manufacturers' Association.—A meeting of the executive committee of the American Electric Railway Manufacturers' Association to elect officers for the coming year was announced for 10:30 a. m. on Friday, Dec. 9, 1910, at the headquarters of the American Electric Railway Association, 29 West Thirty-ninth Street, New York, N. Y.

Settlement Proposal in Toledo.—Mayor Whitlock, of Toledo, proposes to prepare a proposition to be presented to the Toledo Railways & Light Company which will embody a basis of settlement of franchise renewals. The draft will, however, be approved by the City Council before it is transmitted to the company. It is stated that a plan will be suggested for fixing the value of the property under the schedule reported by the company's engineers some time ago. The administration will select a spokesman and the company will be asked to appoint some one to represent it in the negotiations.

Franchise Ordinances to Relieve Congestion in Pittsburgh.—Five ordinances granting exclusive franchises for 50 years to subsidiary companies of the Pittsburgh (Pa.) Railways for 11 streets in the business district of Pittsburgh have been introduced in the Select Council of that city. By using the streets specified in the ordinances the rerouting proposed by Edward M. Bigelow, former Director of Public Works of Pittsburgh, in his report to the Mayor on street railway congestion and the changes advised by Emil Swenson in his report to the Railroad Commission of Pennsylvania could in general be carried into effect. The grants are asked in the names of the Second Avenue Passenger

Railway, Central Passenger Railway, Pittsburgh & West End Railway and the Ft. Pitt Street Passenger Railway.

Unfair Criticism.—In an interview with Thomas N. McCarter, president of the Public Service Railway, Newark, N. J., published in the Newark *News* recently, Mr. McCarter was quoted as follows in regard to the unfair criticism of public service corporations by the public: "The more I think of it the more I am convinced that criticism of public utility corporations is prompted not so much by poor service, malice or a lack of appreciation as it is by a failure to understand the complexities and difficulties of their work. Perfection itself would have its critics. But I hold fast to the belief that the public as a whole is fair. I am satisfied that when the public hears both sides of a question its decisions are usually just, and that whether it is dealing with a man or a corporation it will always stand firmly for 'a square deal.'"

New Jersey Liability Act Does Not Apply to Street Railways.—Justice Minturn, of the Supreme Court of New Jersey, has decided that street railways of New Jersey are not included in the provisions of the act of 1909 extending the liability of railroads for injuries or death resulting from the negligence of any person having charge or control of any signal, switch, locomotive engine or train on a railroad. His decision was based upon a demurrer interposed by the Public Service Railway in an action for damages. The opinion of the court deals solely with the construction to be placed upon the act of 1909, with respect to its application to street railways. In the syllabus of his opinion Justice Minturn says: "The popular and generally accepted meaning will be applied to the construction of an act of the Legislature in the absence of legislative intent to the contrary. The public policy of the State, as evidenced by a consistent course of legislation on a given subject matter, may be invoked to assist in ascertaining the legislative intent."

Railway Affairs in Detroit.—When the ordinance by Chairman Ellis of the committee on public utilities came before the Detroit Council for consideration on Nov. 29, 1910, Alderman Koenig offered an amendment which provided that the Detroit United Railway should furnish 2-minute service on Jefferson Avenue east of the Fairview car house to the city limits, instead of a 6-minute schedule, as fixed in the original ordinance. Mr. Ellis objected to taking up such an amendment just before voting on the measure. He said that he would move that the whole matter be referred back to the committee rather than have the ordinance changed without careful consideration. The Council acted on his suggestion and the measure is again in the hands of the committee. An ordinance to prohibit passengers from standing in the front vestibule of street cars was referred to the committee on ordinances. A number of officials of the Detroit United Railway and others visited Toledo, Ohio, on Dec. 1, 1910, but they made no statement regarding the significance of the conference which was held at the Boody House, Toledo.

Power Station Improvements in Worcester.—Prof. Harold B. Smith, of the Massachusetts Institute of Technology, Boston, Mass., has submitted to the Mayor of Worcester a report on the power system of the Worcester (Mass.) Consolidated Street Railway based on a study made by him at the instance of the committee on street railways of the City Council of Worcester. In his report Professor Smith referred as follows to the work now being carried out by the company to meet its power requirements: "The Worcester Consolidated Street Railway has apparently found it advisable to delay the development of a suitable power plant until recently. Such a plant is now being built, and in my opinion the improvement of the service which is needed will come with the placing in commission of the first 5500-kw generator at Millbury and the substation at Madison Square. The present condition of work at Millbury justifies the expression of decided doubt if the company will have this first large unit of that plant in regular service by Jan. 1, 1911. With this unit in service, the reliability of the power supply will be greatly increased, as the present loads can ordinarily be carried on this new unit, leaving the Fremont Street plant for reserve for emergency." The plans of the company for increasing its power supply were described in the ELECTRIC RAILWAY JOURNAL of Sept. 10, 1910, page 406.

Financial and Corporate

New York Stock and Money Market

Dec. 6, 1910.

It has been a week of liquidation and declining prices in the Wall Street market. The effort to uphold the market artificially has failed on account of the heavy selling pressure or has been abandoned. There certainly is a disposition to let prices sag and willingness to sell rather than to buy. The volume of transactions has increased, a feature that has marked all the declining markets recently.

There has been practically no improvement in the bond market, although the money market continues remarkably easy. Quotations to-day were: Call, 2⅛@3¼ per cent; 90 days, 4 per cent.

Other Markets

Until this morning tractions have been very dull in the Philadelphia market during the past week. To-day a fairly good buying demand for both Rapid Transit and Union Traction was developed, due, no doubt, to reports that were current that refinancing agreements had been reached.

In the Chicago market there continues to be fair activity for the various issues of Chicago Railways certificates. Series 2 has been particularly active, but sellers have been more insistent than buyers and prices have declined two points within the week.

In the Boston market there has been only light trading in traction securities during the week. Massachusetts Electric shares have been the most active and both the preferred and common have recorded moderate declines.

The Baltimore market as usual has shown no movement in traction securities except in the bonds of the United Railways. These have continued to sell at former prices.

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

	Nov. 29.	Dec. 6.
American Railways Company	a43	a43
Aurora, Elgin & Chicago Railroad (common)	a45	a45
Aurora, Elgin & Chicago Railroad (preferred)	a90	a88
Boston Elevated Railway	127½	127½
Boston & Suburban Electric Companies	*16½	a16
Boston & Suburban Electric Companies (preferred)	a72	a72
Boston & Worcester Electric Companies (common)	a10	a10
Boston & Worcester Electric Companies (preferred)	a40	a39½
Brooklyn Rapid Transit Company	76⅜	73⅜
Brooklyn Rapid Transit Company, 1st ref. conv. 4s	82⅝	82⅛
Capital Traction Company, Washington	a128	*128
Chicago City Railway	a180	a180
Chicago & Oak Park Elevated Railroad (common)	*3¼	*3¼
Chicago & Oak Park Elevated Railroad (preferred)	*7¼	*7¼
Chicago Railways, ptcptg., ctf. 1	a92	a90½
Chicago Railways, ptcptg., ctf. 2	a25½	a23
Chicago Railways, ptcptg., ctf. 3	a11	a11
Chicago Railways, ptcptg., ctf. 4	a6½	a6¼
Cleveland Railway	*91½	*91½
Consolidated Traction of New Jersey	a73	a73
Consolidated Traction of N. J., 5 per cent bonds	a104	a104
Detroit United Railway	a54½	a53¼
General Electric Company	a155⅞	a149½
Georgia Railway & Electric Company (common)	*118	a117½
Georgia Railway & Electric Company (preferred)	*88	a88
Interborough-Metropolitan Company (common)	19⅝	19
Interborough-Metropolitan Company (preferred)	53¾	53⅛
Interborough-Metropolitan Company (4½s)	80	79½
Kansas City Railway & Light Company (common)	a21¼	21¼
Kansas City Railway & Light Company (preferred)	a75	75
Manhattan Railway	140	138
Massachusetts Electric Company (common)	a19½	a18
Massachusetts Electric Companies (preferred)	86	a83
Metropolitan West Side, Chicago (common)	21	*21
Metropolitan West Side, Chicago (preferred)	*68	65
Metropolitan Street Railway, New York	19½	*19½
Milwaukee Electric Railway & Light (preferred)	*110	*110
North American Company	61½	62
Northwestern Elevated Railroad (common)	a22	*22
Northwestern Elevated Railroad (preferred)	a60	*60
Philadelphia Company, Pittsburg (common)	a45	*44¼
Philadelphia Company, Pittsburg (preferred)	a42	a42
Philadelphia Rapid Transit Company	a18½	a18¾
Philadelphia Traction Company	*82	a83
Public Service Corporation, 5 per cent col. notes	a95	*95
Public Service Corporation, ctfs	a101	*101
Seattle Electric Company (common)	a107¼	107¼
Seattle Electric Company (preferred)	*103	a102
South Side Elevated Railroad (Chicago)	*65	a65
Third Avenue Railroad, New York	10⅝	11¼
Toledo Railways & Light Company	a8	7
Twin City Rapid Transit, Minneapolis (common)	a109½	108½
Union Traction Company, Philadelphia	a43½	a44
United Rys. & Electric Company, Baltimore	a14½	*14½
United Rys. Inv. Co. (common)	*14¾	*14¾
United Rys. Inv. Co. (preferred)	*57	52
Washington Ry. & Electric Company (common)	a33½	*33½
Washington Ry. & Electric Company (preferred)	a87½	*87½
West End Street Railway, Boston (common)	a90½	a89½
West End Street Railway, Boston (preferred)	*100½	*100½
Westinghouse Elec. & Mfg. Co.	69	65½
Westinghouse Elec. & Mfg. Company (1st pref.)	*124	124

a Asked. *Last sale.

Atlantic Shore Line Railway, Sanford, Maine.—The property of the Atlantic Shore Line Railway was sold under foreclosure on Dec. 1, 1910, for $115,000 to the reorganization committee which is acting in behalf of the holders of the 4 per cent refunding bonds of the company dated 1906, the second mortgage 6 per cent bonds dated 1909, and the first preferred stock of the company.

Charlotte Electric Railway, Light & Power Company, Charlotte, N. C.—The property of the Charlotte Electric Railway, Light & Power Company, which was purchased recently by the Southern Power Company, will be transferred by that company to the Piedmont Traction Company, which is owned by the same interests, and will be used as the keystone for a network of electric railways between the cities and towns of the Piedmont section of the Carolinas, extending from Anderson, S. C., on the southwest, to Durham, N. C., on the northeast, passing through Greenville, Spartanburg and other South Carolina cities and towns and Charlotte, Gastonia, Concord, Salisbury, Greensboro, High Point and Durham and intermediate places.

Chicago (Ill.) Consolidated Traction Company.—The property of the Chicago Consolidated Traction Company was sold under foreclosure on Nov. 30, 1910, to Andrew Cooke, representing the reorganization committee of the bondholders, for $1,425,000. The underlying mortgages of the company are to be replaced by blanket securities of the Chicago Railways, and the entire system of the Consolidated Traction Company is to be rehabilitated. Of the original $6,750,000 of the bonds of the Chicago Consolidated Traction Company approximately 95 per cent have been acquired by the Chicago Railways. Purchase money bonds to the amount of $6,000,000 have been authorized. They are dated Jan. 1, 1911, and mature Feb. 1, 1927, but are redeemable at par and interest at any interest date. From 1911 to 1915, inclusive, the issue will bear interest at 4 per cent, thereafter at 5 per cent, payable semi-annually. Of this authorized issue $4,073,000 are to be deposited with the depositary and the remaining $1,927,000 are to be issuable from time to time in payment of any claims originating or connected in any way with the taking over of the Consolidated Traction System or for any other purpose except the payment of operating expenses, dividends or interest charges of the Chicago Railways. Adjustment income bonds to the amount of $2,500,000 have been authorized. They are dated Jan. 1, 1911, and mature Feb. 1, 1927, and bear interest at 4 per cent, payable annually or semi-annually, but only out of net earnings of the Chicago Railways. Interest is non-cumulative on this issue.

Frederick (Md.) Railway.—The Frederick Railway has applied to the Public Utilities Commission of Maryland for authority 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.

Hoosick Falls (N. Y.) Railroad.—The Public Service Commission of the Second District of New York has authorized the Hoosick Falls Railroad to issue its common capital stock to the amount of $100,000 to acquire all of the property, rights and franchises formerly belonging to the Bennington & North Adams Street Railway in New York State. The New York, New Haven & Hartford Railroad, which controls the property, has been authorized to acquire and hold the capital stock of the Hoosick Falls Railroad.

Indianapolis, Crawfordsville & Western Traction Company, Indianapolis, Ind.—Harry J. Milligan, receiver for the Indianapolis, Crawfordsville & Western Traction Company, reports the earnings of the company for October as follows: Gross receipts, $16,268; operating expenses, $11,550; net earnings, $4,717. The balance on hand on Oct. 1, 1910, was $13,557, and the balance on hand Nov. 1, 1910, was $16,554.

Newport News & Old Point Railway & Electric Company, Newport News, Va.—The Newport News & Old Point Railway & Electric Company has purchased $606,000 of its general mortgage bonds through the Maryland Trust Company, trustee. The total authorized issue of these bonds is $4,000,000, and of this amount $2,300,000 has been issued. Of the total amount issued $698,000, including the $606,000 recently purchased, has been retired, leaving outstanding $1,602,000. The remainder of the issue is held by the trustee to retire underlying bonds and bonds of constituent companies.

Philadelphia (Pa.) Rapid Transit Company.—A meeting of the directors of the Philadelphia Rapid Transit Company was called for Dec. 7, 1910, to consider the suggestion of E. T. Stotesbury, of Drexel & Company, that the company surrender its equity in its Market Street elevated line in return for the guarantee by the Union Traction Company of a loan for $10,000,000.

Portland Railway, Light & Power Company, Portland, Ore.—The stockholders of the Portland Railway, Light & Power Company have approved the plan to retire the preferred stock by redemption at 105, and to give the common stockholders the privilege of exchanging their present holdings for new stock. The result will be that, instead of the company having $15,000,000 of capital stock divided into $5,000,000 of preferred and $10,000,000 of common, the capital stock will be $25,000,000, of which $16,250,000 will be paid in. As a further result the company will receive $1,000,000 in cash.

Public Service Corporation of New Jersey, Newark, N. J.—Horatio G. Lloyd, of Drexel & Company, Philadelphia, Pa., and J. Horace Harding, of Charles D. Barney & Company, New York, N. Y., have been elected directors of the Public Service Corporation of New Jersey to fill vacancies in the board.

Scranton (Pa.) Railway.—The Scranton Railway has filed for record a mortgage covering its property given in favor of the Equitable Trust Company as trustee to secure an issue of $1,000,000 of 5 per cent bonds dated Nov. 1, 1910, and due Nov. 1, 1920, but subject to call at any interest period at 102 and accrued interest. The bonds were authorized by the directors of the company on Oct. 26, 1910, and a block of them has already been offered for subscription by Bioren & Company, Philadelphia, Pa.

Third Avenue Railroad, New York, N. Y.—The Public Service Commission of the First District of New York has denied the formal request of Herbert J. Bickford, of counsel for the Third Avenue Railroad, to the commission to reconsider all the facts and conclusions in connection with the application to the commission to reorganize the company and to abrogate, modify or change its order so as to grant the relief requested by the petition of the committee of bondholders and the Third Avenue Railway. An abstract of the grounds on which the application for a rehearing was based was published in the Electric Railway Journal of Oct. 29, 1910, page 909.

West End Street Railway, Boston, Mass.—The Railroad Commission of Massachusetts has ordered that the 1049 shares of common stock of the West End Street Railway authorized by the commission on Sept. 15, 1910, and remaining unsubscribed by stockholders of the West End Street Railway entitled to take them shall be offered for sale at public auction in Boston to the highest bidder at not less than par, to be paid in cash.

Dividends Declared

Chippewa Valley Railway, Light & Power Company, Eau Claire, Wis., quarterly, 1¾ per cent, preferred.

Continental Passenger Railway, Philadelphia, Pa., $3 per share.

Duluth-Superior Traction Company, quarterly, 1 per cent, preferred; quarterly, 1¼ per cent, common.

Indianapolis (Ind.) Street Railway, 3 per cent.

Massachusetts Electric Companies, Boston, Mass., $2 per share, preferred.

Norfolk Railway & Light Company, Norfolk, Va., 2½ per cent.

Northern Ohio Traction & Light Company, quarterly, ¾ of 1 per cent.

South Side Elevated Railroad, Chicago, Ill., quarterly, ½ of 1 per cent.

Twin City Rapid Transit Company, Minneapolis, Minn., quarterly, 1¾ per cent, preferred; quarterly, 1½ per cent, common.

Washington Railway & Electric Company, Washington, D. C., 2½ per cent, preferred; 1 per cent, common.

Traffic and Transportation

Final Order for Joint Rates on New York Street Railways

At a meeting of the Public Service Commission of the First District of New York held on Dec. 1, 1910, the following order was adopted denying the application of the receivers of the Metropolitan Street Railway for an extension of time from Dec. 5, 1910, to Jan. 1, 1911, to establish a joint rate with the Central Park, North & East River Railroad for the transportation of passengers as provided in the order of the commission dated Aug. 2, 1910:

"Adrian H. Joline and Douglas Robinson, as receivers of the Metropolitan Street Railway, having made application in writing, dated Nov. 29, 1910, for a further extension of time in respect to the matters hereinafter mentioned, and, in the judgment of the commission, sufficient reason therefor not having been made to appear, it is

"Ordered: That the application of said Adrian H. Joline and Douglas Robinson as receivers of the Metropolitan Street Railway for an extension of time to establish and thereafter maintain in operation through routes for the transportation of passengers and to establish and put in force a joint rate of fare, in accordance with the order duly made in the above entitled matter on Aug. 2, 1910, which time was extended by orders duly made in the above entitled matter on Sept. 1, 1910, and Nov. 7, 1910, be, and the same hereby is, in all respects denied."

In the opinion announcing the decision the commission says:

"The commission originally on Aug. 11, 1908, directed the receivers of the Metropolitan Street Railway and the Central Park, North & East River Railroad to establish through routes and joint fares, which they failed to do. The commission thereupon instituted a case to ascertain proper joint rates and on Oct. 30, 1908, ordered that the two companies should establish through routes and joint rates by Nov. 22, 1908. Thereafter the receivers of the Metropolitan Street Railway secured a writ of certiorari and the matter has since been in the courts.

"Following certain amendments to the Public Service Commissions law by the Legislature of 1910, the commission on Aug. 2, 1910, ordered the receivers of the Metropolitan Street Railway and the Central Park, North & East River Railroad to establish through routes and joint fares on or before Sept. 1, 1910. Thereafter the time by which the companies were to establish joint rates and the time by which the commission was to be notified were extended to Nov. 1, 1910.

"The commission was advised by the receivers of the Metropolitan Street Railway on Oct. 21, 1910, that it would arrange for the establishment not on Nov. 1, 1910, but on Dec. 15, 1910, of a certain system of through routes and joint rates with the Central Park, North & East River Railroad and later the latter company notified the commission to the same effect. The commission after consideration of the matter modified its order which required that the joint rates established by the company should go into effect by Nov. 1, 1910, by extending the time to Dec. 5.

"The receivers of the Metropolitan Street Railway now ask that this time be extended to Jan. 1, 1911, giving as the reason therefor that sufficient time is necessary to instruct conductors properly in regard to the joint rate ticket procedure as well as to facilitate the proposition from an accounting standpoint. It would appear that the receivers of the Metropolitan Street Railway have had all the time reasonably necessary to instruct conductors properly or to facilitate accounting and that there has therefore been presented to the commission no adequate reason requiring postponement of the effective date of the joint rates. Any temporary inconvenience that may be caused to the receivers of the Metropolitan Street Railway is much more than counterbalanced by the inconveniences that have been endured by the traveling public and it is unfair that the commission should be asked to allow any further extension of time.

"The commission accordingly denies the application for an extension of time and calls the attention of the receivers of the Metropolitan Street Railway and the Central Park, North & East River Railroad to the fact that the commission has fixed Dec. 5 as the date when such joint rates shall go into effect and will avail itself of the remedies provided for by the Public Service Commissions law to see that this is complied with."

The offer of Adrian H. Joline and Douglas Robinson, receivers of the Metropolitan Street Railway, made with the consent of the bondholders' reorganization committee, to establish a modified transfer system between the Fifty-ninth Street line of the Central Park, North & East River Railroad and the north and south lines of the Metropolitan Street Railway was referred to in the ELECTRIC RAILWAY JOURNAL of Nov. 5, 1910, page 971.

The Metropolitan Street Railway did not comply with the final order of the commission on Dec. 5, 1910. On Dec. 3, 1910, the company wrote to the commission stating that it would be physically impossible to comply with the order on the date mentioned. No transfers had been printed and many other reasons were cited as to why the company could not meet the requirements of the order. It was expected that a meeting of the commission would be called within a few days to consider the situation.

Reduction in Fare to Revere Beach

The Railroad Commission of Massachusetts has dismissed the petition of the Selectmen of Revere in regard to fares and service on the Boston Elevated Railway and the Boston & Northern Street Railway to the Revere Beach reservation, which would in effect have afforded the petitioners a 5-cent fare from all parts of the Boston Elevated Railway to Revere Beach. In dismissing the petition the commission said:

"The petition recites that certain changes in the rates of fare are reasonable and expedient in order to promote the convenience and accommodation of the public, and requests the board to require the Boston Elevated Railway and the Boston & Northern Street Railway to make an arrangement so that passengers upon their cars may be transported between Orient Heights and the Revere Beach reservation for a fare uniform with that charged by the said companies for transportation to the same point over other lines of track; or that the Boston & Northern Street Railway be required to operate cars on those tracks, and that transfers be given by each company whereby passengers upon the cars of either of said companies may be transported from the various parts of Boston, Chelsea and Revere at a rate of fare uniform with that charged for transportation to said reservation over other lines of track.

"In discussing a similar situation in Malden in an order issued on March 7, 1907, the board used this language:

"'The same conditions exist at nearly all other points where interurban railways connect with the system of the Boston Elevated Railway. The peculiar privileges granted to that company under special laws include the right to insist upon a 5-cent fare from every passenger, a right that stands in the way of any arrangement for a joint fare to be shared with other companies. The board has no authority to suggest that the Boston Elevated Railway relinquish a part of the fare to which it is entitled by law, and it cannot rightfully ask the Boston & Northern Street Railway to furnish service without compensation; nor has it any jurisdiction over extensions of railway lines or changes in the control or ownership of lines.'

"The board finds that no action is open upon this complaint which will afford the petitioners the facilities they desire and the petition is therefore dismissed."

New Wage Agreement on the Illinois Traction System

The Illinois Traction System, Peoria, Ill., and the Brotherhood of Interurban Trainmen, on Nov. 21, 1910, signed a new wage agreement which indicates the friendly relations between the employees and the company. The essentials of the new agreement follow:

"Both parties agree to confer on all cases. The company reserves the right to hire and discharge men for cause without interference from the brotherhood. A merit and demerit mark system will immediately be installed and the marks shall be used as a basis for discharge. A board of inquiry consisting of two superintendents, three trainmasters and the chairman of each of the five lodges shall hear all charges against trainmen and the trainmen shall have

the right to appear before this board in their own behalf. Appeal from a decision of this board can be had to the general superintendent and from him to the vice-president executive. Any trainman who has been dismissed and later held innocent of the charges which caused dismissal shall have his record corrected and shall be paid for lost time. Trains consisting of two cars handling passengers will be manned with a crew of three trainmen. Trains of two cars carrying passengers not doing station work shall have such crews as the superintendent may decide to be necessary. Usual provisions as to seniority, runs, etc., will obtain.

"Wages shall be based on a nine-hour day, and a run of 225 miles completed in less than this time will be counted as one day. Extra runs are to be paid for on a nine-hour-day basis. Beginning Dec. 1 the men on the hourly basis will receive a 10 per cent increase and at the expiration of six months from Dec. 1, 1910, a further 10 per cent increase. Men on the mileage basis will receive an increase of 15 per cent on Dec. 1, 1910, and 5 per cent additional increase after six months. After six months from Dec. 1, 1910, when the contract goes into effect, all motormen and conductors will receive a flat rate of 30 cents per hour. A new class is to be added to the trainmen, to be known as brakemen, through which grade all men must pass before being promoted to motorman or conductor. Standard examinations must be passed before a man is promoted from this class. The compensation will be 23 cents per hour. Usual provisions for uniforms, passes, association business, etc., form a part of the contract. It is agreed that the brotherhood shall not cause a sympathetic strike for any outside cause or grievance. A board of arbitration consisting of three members will settle all differences and if an agreement cannot be reached a new board is to be appointed within 10 days and arbitration is to continue until the differences are settled. No strikes are to be called for any cause."

The new contract will run until Dec. 1, 1913.

Compulsory Interchange of Street Railway Traffic Considered

The Railroad Commission of Massachusetts, as noted in the Electric Railway Journal of Nov. 26, 1910, page 1068, is considering the subject of making it obligatory for street railways to receive and convey over their lines traffic offered by connecting street railways and will report its findings to the Legislature in 1911. G. C. Travis, counsel for the Boston Elevated Railway, has filed with the commission a brief in opposition to the suggestion The Boston Elevated Railway submits that it is not advisable or in the public interest to enact any legislation making it compulsory for street railways to receive and convey over their tracks traffic or cars tendered by connecting street railways. The company maintains that there is no public demand for it; that the legislation is unnecessary; that there are practical equipment difficulities; that there are difficulties of operation, and that it would force an entrance into the field of freight traffic. Counsel for the company says that legislation to compel such conveyance of traffic is unnecessary because if the traffic is feasible and remunerative no street railway will refuse it, and if it is not no company should be compelled to take it. It is against the public interest that any public service corporation should be compelled to transact business at a loss. The company says:

"Compulsory interchange of cars should not be considered with reference to the Boston Elevated Railway alone. Conditions which may by great painstaking make such interchangeable possible in the city might under some conditions arising in the country be extremely burdensome and perhaps ruinous to a small company, for large expenditures had to be made upon the Boston Elevated Railway for strengthening bridges, clearing curves, etc., for one line alone. Had some company desired to run upon the lines of a small rural electric railway large, heavy, high-speed cars, which might be suited to the interurban railway, but very little suited to the conditions of the small railway, it might be that with a compulsory law the small railway would be called upon to make investments in money for this purpose alone far beyond its means or reasonable power to grant."

Counsel argues that street railways in general in Massachusetts have been chartered to do a passenger business. Investors have not contemplated a possible compulsory requirement that they should go into the freight business. Attempts have been made to draw an analogy between steam railroads and street railways. The conditions are in no sense alike. The requirement that steam railroads should interchange cars to avoid breaking bulk for through freight and the further requirement that they should do so in connection with certain interurban railroads operated by trolley have no bearing upon the Massachusetts situation.

Changes in Routes in Washington.—The Capital Traction Company, Washington, D. C., recently posted placards in its cars giving in detail changes in the routes of several lines operated by the company which were made on Dec. 5, 1910.

Rates on Illinois Traction System.—A very slight increase has been made recently in the passenger rates on the Illinois Traction System. The one-way rates are now based on about 2 cents per mile and the round trips are approximately 180 per cent of the one-way rates.

Freight Rights Approved in Massachusetts.—The Railroad Commission of Massachusetts has approved the grant which the Berkshire Street Railway, Pittsfield, Mass., secured on Aug. 22, 1910, from the Selectmen of Egremont to act as a common carrier of newspapers, baggage, express and freight in Egremont.

Safety Gates in Leavenworth.—The Kansas City-Western Railway has equipped one of its cars which is operated regularly in Leavenworth with safety gates, and has announced that if the car equipped with the gates proves satisfactory in service all of the company's cars which are operated in Leavenworth will be equipped with gates.

Enforcing Car Rules in Toronto.—On Dec. 1, 1910, the Toronto (Ont.) Railway commenced to enforce the rules against smoking and spitting on its cars and the rule against passengers riding on the rear platforms of cars. The regulations of the company were authorized and approved by the Ontario Railway & Municipal Board and provide a penalty of $10 for each infraction of the rules.

Service in Rochester.—The Council of Rochester, N. Y., has referred to its railroad committee the resolution of Alderman Small to instruct the Corporation Counsel of the city to file a formal complaint in behalf of the city with the Public Service Commission of the Second District of New York about the service furnished by the New York State Railways, Rochester Lines, on its Genesee Street, Jefferson Avenue and Plymouth Avenue lines.

Hearing on Joint Rates in New York.—The Public Service Commission of the First District of New York ordered a hearing on Dec. 8, 1910, to determine whether the Central Park, North & East River Railroad, which operates the Fifty-ninth Street crosstown line and the South Shore Traction Company should be required to establish joint rates between the Fifty-ninth Street line and the shuttle service maintained by the South Shore Traction Company over the Queensborough Bridge.

Rules of the Road in New Haven.—A code of rules governing the use of the streets in New Haven, Conn., by vehicles and cars was adopted by the Board of Aldermen on Nov. 14, 1910, and went into effect Nov. 29, 1910. Under it the police have charge of the movement of traffic at all congested corners. Vehicles are prohibited from passing any "standing street railway car from which passengers are being received or discharged so as to interfere unreasonably in any way with such passengers."

Assignment of Runs in Philadelphia.—On Nov. 30, 1910, the Philadelphia (Pa.) Rapid Transit Company posted in all its car houses notices announcing the assignment of runs for conductors and motormen in fulfilment of the ruling made on Nov. 8, 1910, by the board of arbitration which was appointed to consider this matter. The decision of the arbitrators was included as part of the article "Arbitration in Philadelphia on Loyal Men," which was published in the Electric Railway Journal of Nov. 12, 1910, page 992.

Five-Cent Fare on Nine-Mile Road Opposed.—Speaking before the Hyde Park Business Men's Association recently, Representative Roger Wolcott, of Milton, said that if the matter comes up in the Legislature of Massachusetts he will oppose a 5-cent fare on the Old Colony Street Railway from

Hyde Park to Boston. He said that his reason for opposing it is that he wants to be fair to the company as well as to the public and it would be unfair to compel the company to carry passengers nine miles for 5 cents.

School Fares on the Boston & Northern Street Railway.—Robert Goff, vice-president and general manager of the Boston & Northern Street Railway, Boston, Mass., has proposed to Mayor James E. Rich, of Lynn, that an agreement be entered into with the company under which pupils at the evening high school in Lynn shall pay full fare pending a decree by the Supreme Court in regard to the contention by the Boston & Northern Railway that Chapter 520 of the Acts of 1908, which provides for half fares for pupils of high schools, is not constitutional. All money paid by pupils in excess of the one-half rate would be refunded to them.

All-Night Service in Boston Subway.—The Boston (Mass.) Elevated Railway has decided to open the Tremont Street subway for all-night service, effective Dec. 10, 1910. William A. Bancroft, president of the company, said in a letter to Mayor Fitzgerald, of Boston: "Our executive committee, after careful consideration and study of the question, has voted, notwithstanding the very large expense involved, to open the subway for night cars, beginning on the night of Dec. 10. We have concluded for the present, at least, not only to open the subway, but to maintain the existing service on the surface, so as practically to double the existing service during the night."

Conference in Indiana Between Commission and Interurban Representatives.—After investigating the causes of recent accidents on electric railways in Indiana the Railroad Commission of Indiana conferred on Nov. 29, 1910, with the representatives of various interurban railways in that State. The conference was not a public one, and was in a way preliminary to the meeting of the representatives of the electric railways with the Governor which has been called for Dec. 13, 1910. The Railroad Commission has made recommendations to certain electric railways in the State regarding operation and has asked the companies to reply by Dec. 10, 1910. These replies will, perhaps, cover much of the ground of the conference on Dec. 13, 1910.

Signs on Cleanliness in Interurban Cars.—George H. Whysall, general manager of the Columbus, Marion & Bucyrus Railway, Delaware, Ohio, has had posted "sanitary" signs at each end of both compartments of its interurban cars. The posted signs are 21 in. wide by 11 in. high and are printed in black and white. A copy of the anti-spitting order of the State Board of Health is introduced with the following announcement regarding cleanliness: "Cleanliness is necessary to health in cars as well as in homes. This car is chemically disinfected and cleaned every night and the management respectfully invites your co-operation in keeping the seats and the floor clean. Spitting on the floor is contrary to the laws of health and of the State. Cuspidors are provided in the smoking compartment."

Key Route to Fill Its Oakland Pier.—One of the largest municipal harbor projects undertaken on the Pacific Coast is that of Oakland, Cal., which has just received the sanction of the War Department. It consists of the development of what is known as the Key Route Basin on the east shore of San Francisco Bay, extending between the Oakland route of the Southern Pacific Company and the pier of the Key Route on the San Francisco, Oakland & San José Railroad. The plans, which were made by F. C. Turner, city engineer of Oakland, provide for the construction of a seawall along the new bulkhead line, the dredging of a channel, the filling of the space landward from the seawall and the building of piers. Under the terms of the agreement, the San Francisco, Oakland & San José Railroad will have to fill in about 500 acres, in addition to filling in its electric railway pier, about 15,000 feet long. The work is to be started immediately.

Chicago & Milwaukee Electric Railroad Issues New Timetable.—The Chicago & Milwaukee Electric Railroad, Chicago, Ill., "the scenic route of the beautiful north shore," has issued a 16-page timetable of standard size, illustrated with half-tone views of the roadway, equipment and offices, and with full-page map showing the interurban lines between Chicago, Waukegan, Milwaukee, Sheboygan, Oconomowoc and other points tributary to Milwaukee. The new folder includes a statement of the operating organization of the road, a description and timetable of the fast limited trains operated between Milwaukee and Chicago, complete timetable of all passenger trains, information regarding commutation rates, chartered-car rates, café and parlor-car accommodations and rates, an announcement of the United States express service operated over the line, a directory of the ticket offices and waiting rooms in the cities reached, a directory of the universities and colleges located on the line, and general miscellaneous facts on points of interest, steamship and railroad connections, etc. This timetable has been prepared under the supervision of E. H. Vivian, traffic manager and claim agent of the company. E. E. Downs is general manager of the Chicago & Milwaukee Electric Railroad.

Application for Rehearing of Rensselaer Fare Case.—The United Traction Company, Albany, N. Y., has applied to the Public Service Commission of the Second District of New York for a rehearing of the case in which the commission ruled that the company is entitled to charge only 5 cents fare between Albany and Rensselaer, as noted in the ELECTRIC RAILWAY JOURNAL of Dec. 3, 1910, page 1127. The company has also requested the commission to suspend the enforcement of the decision until a rehearing has been held. The company maintains that it is authorized by contract to charge 6 cents fare between Albany and Rensselaer; that neither the Legislature nor the commission has authority to deprive it of this contract right, and that the decision and order of the commission are confiscatory and will reduce the receipts below the operating expenses. In regard to the effect of the reduction in fares on its earnings the company says in the petition for a rehearing: "Upward of $120,000 is invested in the railroad property operated by the respondent in Rensselaer, exclusive of the respondent's equipment, and its capital stock is $120,000, on which no dividend has been paid except in 1909 and 1910, when a 4 per cent dividend was paid thereon, and which could not have been paid except by the collection of 6 cents per passenger transported by it between Rensselaer and Albany, and if said act of the Legislature is enforced and the respondent prohibited from charging or collecting more than 5 cents per passenger carried by it between said cities and has to pay the bridge toll therefrom it will not be able to make its operating expenses."

Service Between Newark and New York.—From 1895 to 1898 the Consolidated Traction Company, which is now controlled by the Public Service Railway, carried passengers from Newark, N. J., to New York and return for a 25-cent fare. This charge included ferriage over the Hudson River. In 1898 the fare was changed to 10 cents one way without transfers and 12 cents with transfer privileges in Newark. This rate remained in force until 1909. Between 1898 and 1909, however, the number of through passengers between Newark and New York became very small and most of the riding on the line between the two cities was from points in Newark to points in Hudson County or vice versa. On account of this condition and the fact that the Pennsylvania Railroad at the instance of the Interstate Commerce Commission discontinued selling ferry tickets good between Jersey City and New York at a special rate, the Public Service Railway put into effect a 10-cent fare between Essex County and Hudson County with transfer privilege at either end. As there was no public demand for a through ticket to New York at the old rate, none was offered for sale. A member of the Board of Works of Newark forwarded a letter of complaint about the service between Newark and New York to the Public Utility Commission before communicating his desires or intentions to the company. When the subject was brought to the attention of Thomas N. McCarter, president of the Public Service Railway, he ordered the 25-cent rate restored. Instead of selling through tickets, however, the company will continue its 10-cent rate between Newark and Jersey City and through passengers upon presenting identification slips at the Exchange Place terminal in Jersey City will be sold two ferry tickets for 5 cents, the rate at which the Pennsylvania Railroad sells tickets in lots of 10 or more. So far as the traveling public is concerned the change will make very little difference, as the number of passengers who ride from Newark through to New York is very small compared with the total number of passengers who patronize the line for only part of the distance between Newark and Jersey City.

Personal Mention

Mr. L. Cox has resigned as superintendent of the Oklahoma Union Traction Company, Tulsa, Okla.

Mr. H. A. Benedict, electrical and mechanical engineer of the United Traction Company of Albany, has resigned, as of Jan. 1, 1911, to become assistant general manager of the Public Service Railway, Newark, N. J.

Mr. A. R. Myers, who has been electrical engineer of the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., will hereafter have charge of the maintenance of the rolling stock of the company in addition to the duties which he has performed heretofore.

Mr. Samuel S. Watkins has resigned from the testing bureau of the Brooklyn (N. Y.) Rapid Transit Company to become connected with Mr. Lewis B. Stillwell in the work of equipping the Hoosac Tunnel of the Boston & Maine Railroad with electricity.

Mr. Roy Edinger has been appointed superintendent of power and equipment of the Warren & Jamestown Street Railway and the Warren Street Railway, Warren, Pa. Mr. Edinger was formerly master mechanic of the Ft. Wayne & Springfield Railway, Decatur, Ind.

Mr. R. M. Hemming, formerly assistant superintendent and electrical engineer of the Ohio & Southern Traction Company, Columbus, Ohio, has been appointed general manager of the company. Mr. Hemming became connected with the Ohio & Southern Traction Company in 1906 when construction work was undertaken. In 1899 he had charge of the municipal power plant at Columbus, Ohio. In 1900 he entered the contracting business and carried this work on for two or three years. Later he became electrical engineer of the Buckeye Steel Castings Company.

Mr. J. H. Harvey, secretary to Mr. J. M. Egan, president of the Metropolitan Street Railway, Kansas City, Mo., has been appointed superintendent of employment of the company. Mr. Harvey was born at Marshall, Mo., on Aug. 23, 1884. He was educated in the Woodlawn and Bryant schools, Kansas City, Mo., and was graduated from the Central High School, Kansas City, with the class of 1902. Mr. Harvey first entered the employ of the Kansas City *World*, but in April, 1903, he became connected with the Metropolitan Street Railway as a timekeeper. He was soon promoted to general timekeeper and later was made chief timekeeper for the entire system under Mr. J. A. Harder, then auditor of the company, but now the comptroller. Subsequently he was appointed secretary to Mr. Egan. Mr. Harvey is studying law at the Kansas City School of Law, and will graduate with the class of 1911.

Mr. H. J. Horne, assistant general manager of the Chicago, Burlington & Quincy Railroad's lines west of the Missouri River, has been appointed assistant to Mr. Charles S. Mellen, president of the New York, New Haven & Hartford Railroad. Mr. Horne will have charge of the operation of the steam lines of the New York, New Haven & Hartford Railroad and will do practically the same work that was done by Mr. John F. Stevens, formerly vice-president of the company. The last official of the New York, New Haven & Hartford Railroad to have the title of assistant to the president was Mr. H. A. Fabian, who later became manager of purchases and supplies. Upon Mr. Fabian's appointment to the latter position Mr. E. G. Buckland, vice-president of the company, assumed some of the duties performed by Mr. Fabian. Mr. Horne will, it is understood, assume some of Mr. Buckland's present duties so far as they concern the operation of the steam lines.

Mr. John C. Thompson took formal charge of the Trenton (N. J.) Street Railway on Dec. 1, 1910, as general superintendent. Mr. Peter E. Hurley, the retiring general manager, will remain with the company until Jan. 1, 1911, so that Mr. Thompson may become better acquainted with the city and the railway property. Mr. Thompson entered the employ of the United Traction Company, Troy, N. Y., as a conductor in 1892, and after a few years was made an inspector. In 1900 he was appointed assistant superintendent of the Troy Division of the United Traction Company under Mr. Charles H. Smith, superintendent, and continued in this capacity until the property was taken over by the Delaware & Hudson Company. Mr. Thompson then became superintendent of the Troy division, succeeding Mr. Smith, who was made general superintendent of the company. Mr. Thompson continued as superintendent of the Troy division of the United Traction Company until he was appointed general superintendent of the Trenton Street Railway. As previously announced in the Electric Railway Journal, Mr. Hurley, who retires as general manager of the company, will become connected with the Filbertine Paving Company.

Mr. George P. Richardson has resigned as master mechanic of the Buffalo & Lake Erie Traction Company, Buffalo, N. Y., to become master mechanic of the Berkshire Street Railway, Pittsfield, Mass. Mr. Richardson was born in Gardiner, Me., and was educated in the public schools of Westbrook, Me. He served four years with S. D. Warren & Company, Cumberland Mills, Me., learning the trade of machinist. Mr. Richardson entered railway work in May, 1897, with the Boston (Mass.) Elevated Railway. In May, 1899, he resigned from the Boston Elevated Railway to accept a position on repair work with the Exeter, Hampton & Amesbury Street Railway, Exeter, N. H. A year later he was appointed foreman of repairs with the Exeter, Hampton & Amesbury Street Railway and continued in that position until April, 1903, when he accepted a similar position with the Newton (Mass.) Street Railway. In February, 1905, Mr. Richardson was transferred to the Auburndale station of the Middlesex & Boston Street Railway in charge of all repairs there and continued in this capacity until November, 1909, when he accepted the position of master mechanic of the Buffalo & Lake Erie Traction Company, which operates 68 miles of electric railway between Buffalo, N. Y., and Erie, Pa.

Mr. Charles W. Ford, who has resigned as general superintendent of the Oklahoma Railway, Oklahoma City, Okla., entered the electric field in 1892 with the Thomson-Houston Company on construction in the Southern States. In 1893 he was made superintendent of a lighting and ice plant in Northern Alabama, but resigned from this position in 1894 to engage in the electrical contracting business. Desiring to enter the railway field, Mr. Ford became connected with the New Orleans Traction Company, which was electrifying the horse car lines in New Orleans. He remained with this company during 1895 and a part of 1896. Mr. Ford next accepted a position with the Galveston (Tex.) City Railway and continued with this company in several different positions until Jan. 1, 1900, when he became manager of a light plant in Central Texas. He returned to the Galveston City Railway on Jan. 1, 1901, as superintendent and remained with the company until October, 1902, when he became connected with the Metropolitan Railway. Oklahoma City, Okla., as superintendent of construction and operation. When the Oklahoma City Railway succeeded the Metropolitan Railway Mr. Ford retained his position and was engaged more extensively in construction and in conducting the operation. The Oklahoma Railway was finally organized to succeed the Oklahoma City Railway, and Mr. Ford was made general superintendent in charge of operation and construction, and he continued in this capacity until Jan. 1, 1910, when he was relieved of construction and placed in charge of operation. Mr. Ford retired from the company as superintendent on Nov. 15, 1910.

OBITUARY

J. C. Bound, superintendent of the Dallas & Harvey's Lake division of the Wilkes-Barre (Pa.) Railway, is dead. Mr. Bound was at one time connected with the Atchison, Topeka & Santa Fé Railway, and was formerly assistant to the general manager of the Delaware, Lackawanna & Western Railroad.

Julius E. French, chairman of the board of directors of the Railway Steel Spring Company, is dead. He was a director in the American Locomotive Automobile Company, the American Locomotive Company, the Chicago-Cleveland Roofing Company, the Congress Hotel Company, the Locomotive Security Company, the Standard Coupler Company, the United States Life Insurance Company and the Natural Gas Company.

Construction News

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

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

RECENT INCORPORATIONS

***Elgin Belt Railway, Elgin, Ill.**—Incorporated in Illinois to build an electric railway to connect Elgin and Desplaines. Capital stock, $25,000. Incorporators: Phillip Fuller, Joseph Newman, M. C. Eppenstein, J. M. Blackburn and C. F. Terhune, all of Elgin.

Lafourche Valley & Gulf Railway, Donaldsonville, La.—Incorporated in Louisiana to build a 90-mile railway from Donaldsonville to Leesville on the west bank of Bayou Lafourche. The track will be built with 80-lb. rails. Gasoline motor cars will be operated. Freight and express matter will be handled as well as passengers. Construction will begin within a few months. Capital stock, $1,500,000. Headquarters: Donaldsonville. Directors: F. M. Welch, president; J. Numa Colomb, vice-president; Charles Maurin, secretary and treasurer; Clarence C. Barton, Sr., E. P. Munson, J. T. Badaux, John Marks and S. A. Le Blanc. [E. R. J., Nov. 26, '10.]

***Madison County Railway, Stackhouse, N. C.**—Chartered in North Carolina to build a 10-mile electric railway to connect Stackhouse and Allenstand. Capital stock, $50,000. E. B. McMillan is one of the incorporators.

***International Traction Railways, Buffalo, N. Y.**—Incorporated in New York as an auxiliary of the International Railway to build an electric railway in Abbott Road, Buffalo, between Cazenovia Street and the southerly city line. Capital stock, $100,000. Directors: Morris Cohn, Jr., Niagara Falls; Robert L. Fryer, O. P. Letchworth, Buffalo; Thomas E. Mitten, Chicago; Edmund B. Osler, Toronto, and Nelson Robinson, New York.

***Western Central Railway, Ottawa, Ont.**—Incorporated in Ontario to build electric lines between Toronto and London, with branches to Stratford, Woodstock and Windsor, connecting with ferries to be operated across the Detroit River.

Gogebic & Iron County Railway & Light Company, Ashland, Wis.—Application for a charter has been made in Wisconsin by this company to build an interurban system and develop water power in northern Wisconsin. Capital stock, $100,000.

FRANCHISES

Birmingham, Ala.—The Tidewater Development Company has received a franchise from the City Council to build an electric railway through Birmingham. The contract for the work has been let and construction will begin in the spring. J. M. Dewberry, Birmingham, president.

***Phoenix, Ariz.**—Charles Goldman and H. H. Stone have asked the Board of Supervisors for a 25-year franchise to build an electric railway in Phoenix and extend it to Mesa.

Fresno, Cal.—S. N. Griffith has asked the City Council for a 25-year franchise to build an electric railway over certain streets in Fresno. [E. R. J., Nov. 26, '10.]

***San Rafael, Cal.**—George D. Shearer has received a 49-year franchise from the Council to build an electric railway in San Rafael. The terms of the franchise state that work must be begun within four months and be completed in two years.

Joliet, Ill.—The Illinois Traction System, Peoria, has received a franchise from the Council to build an electric railway through Joliet. This extension will connect Joliet and Morris, a distance of 25 miles.

Pekin, Ill.—The Pekin & Petersburg Interurban Railway has asked the City Council for a franchise to build an electric railway through Pekin. It will connect Pekin and St. Petersburg. J. E. Melick is interested. [E. R. J., Nov. 26, '10.]

Hammond, Ind.—The Eastern Illinois Railway has received a six months' extension of its franchise to complete its track laying in West Hammond.

Webster City, Ia.—The Fort Dodge, Des Moines & Southern Railway will ask the City Council for a franchise to build an electric railway through Webster City. J. L. Blake, manager.

Springfield, Mo.—The Springfield & Western Railroad has asked the Greene County Court for permission to build an electric railway on Nichols Street, in Springfield, and to cross other roads in the county. This projected railway will connect Springfield, Carthage and Joplin, via Bennetts, Plano, Halltown, Paris Springs, Miller, Red Oak and Avilla. At Carthage it will connect with the Southwest Missouri Electric Railways line and run into Joplin. H. D. Mackay, Springfield, president. [E. R. J., Sept. 24, '10.]

Hattiesburg, Miss.—W. S. F. Tatum and W. O. Tatum have received a 25-year franchise from the Council to build an electric railway in Hattiesburg. It is understood that the company will build a belt line around Hattiesburg as soon as possible and leave the short runs for the present company. [E. R. J., Dec. 3, '10.]

Middletown, Ohio.—The Ohio Electric Railway, Cincinnati, has asked the City Council for a franchise to build an electric railway in Middletown. This company has received a franchise from the commissioners of Allen County to build one mile of double track through Lima to reach the new plant of the Gram Motor Truck Company.

Pittsburgh, Pa.—The Pittsburgh Railways has applied to the Select Council for four franchises in the name of four companies, the Second Avenue Passenger Railway, the Central Passenger Railway, Pittsburgh & West End Railway and the Ft. Pitts Street Passenger Railway, to build electric railways over eleven of the business streets of Pittsburgh.

New Cumberland, W. Va.—The Pittsburgh, Steubenville & Wheeling Railway has asked the County Court of Hancock County for franchises to build an electric railway over and along the public roads between Hancock and Brooke Counties. W. H. Hildebrand, Pittsburgh, is interested. [E. R. J., Oct. 22, '10.]

Whitewater, Wis.—The Badger Railway & Light Company, Milwaukee, has received a franchise to build an electric railway through Heart Prairie, Elkhorn and Springfield to Geneva. Gustav Pickhardt, Milwaukee, secretary. [E. R. J., Nov. 26, '10.]

TRACK AND ROADWAY

Grandview Street Railway, Birmingham, Ala.—This company has awarded the contract for ties to E. W. Jordan Contracting Company. It will begin work on Dec. 15 on its proposed four-mile electric railway between Birmingham and Grandview. Capital stock authorized, $200,000. Bonds authorized, $100,000. Power will be obtained from the Birmingham Railway, Light & Power Company. Milner & Browne, engineers. [E. R. J., Nov. 26, '10.]

British Columbia Electric Railway, Ltd., Vancouver, B. C.—A petition has been presented to this company asking it to extend its Victoria Road line along Westminster Road to Boundary Road in South Vancouver, B. C. It is expected to begin work at once on the extension of the company's line along Park Drive from Venables to Hastings Street in Vancouver.

Oakland & Antioch Railway, Oakland, Cal.—This company has begun the construction of its extension between Bay Point and Lafayette. Tracks are being laid near Bay Point.

Ocean Shore Railway, San Francisco, Cal.—This company plans to replace the wooden bridges at Sickles Avenue and De Wolf Street and San José Avenue and Regent Street with steel structures.

Southern Pacific Company, San Francisco, Cal.—Representatives of the Southern Pacific Company in New York have denied the statement contained in special newspaper dispatches to the East from Los Angeles that the company proposes in the near future to equip its line between Los Angeles and Bakersfield with electricity. This line is 170 miles long.

Augusta-Aiken Railway & Electric Company, Augusta, Ga.—This company is considering plans to extend its line from Broad Street down Center Street to the city wharves and to extend the Turpin Hill line and make a loop to intersect with Fifteenth Street and take in Harrisonville. The Summerville and Monte Sano lines are also to be extended.

Fairburn & Atlanta Railway & Electric Company, Fairburn, Ga.—This company has purchased 1000 tons of rails from the Tennessee Coal, Iron & Railway Company. Birmingham, Ala. This line runs from Fairburn to Union City and College Park. W. T. Roberts, Fairburn, president.

Denverside Connecting Railway, East St. Louis, Ill.—This company reports that this proposed railway will be operated by steam. [E. R. J., Nov. 26, '10.]

***Chesterton, Ind.**—It is stated that C. H. Geist, Philadelphia, will finance a company to build an electric railway to connect Chesterton and Whiting via Gary, Dune Park, Miller, Ætna, Buffington and Indian Harbor.

Mesaba Electric Railway, Duluth, Minn.—The Duluth Engineering Company, which has the contract for the construction of this proposed 36-mile railway, has begun the surveys. The line will connect Gilbert and Hibbing via Chisholm, Buhl, Virginia and Ebelethe. Oscar Mitchell, president. [E. R. J., Nov. 19, '10.]

St. Paul Railway Promotion Company, St. Paul, Minn.—This company has completed surveys between St. Paul and Mankato. The railway will connect St. Paul, Mankato, Eagle Lake, Faribault, Northfield and other Southern Minnesota cities. W. L. Sontag, 810 Metropolitan Building, St. Paul, general manager. [E. R. J., Oct. 22, '10.]

***Butler, Mo.**—S. W. Dooley, A. H. Culver and associates are said to be interested in a plan to build an electric railway through Butler.

Jefferson City Bridge Company, Jefferson City, Mo.—Waddell & Harrington, Kansas City, are the contractors for building this proposed electric railway, which will cover the entire city and connect with the Chicago & Alton Railroad and the Missouri, Kansas & Texas Railroad north of the Mississippi River. C. W. Thomas, Jefferson City, is interested. [E. R. J., Oct. 8, '10.]

Hannibal & Northern Missouri Railroad, Palmyra, Mo.—This company is reported to be grading near Bethel, Mo. 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., July 17, '10.]

***Omaha & Western Iowa Traction Company, Omaha, Neb.**—This company is in the market for equipment to build 90 miles of electric railway between Sioux City, Ia., and Omaha, Neb. Headquarters, 3901 North Eighteenth Street, Omaha, Neb.

New Jersey & Hudson River Railway & Ferry Company, Edgewater, N. J.—This company has completed and placed in operation its 1½-mile extension from Highwood to Tenefly.

Easton & Washington Traction Company, Washington, N. J.—M. P. McGrath has been awarded the contract by this company to build an extension of its railway from Port Murray to Hackettstown, N. J. It is expected to begin work shortly.

Elmira Water, Light & Railway Company, Elmira, N. Y.—The Public Service Commission of the Second District has granted the petition from this company for authority to extend its line on Pennsylvania Avenue in Elmira to the southerly city line, thence along the route on Pennsylvania Avenue to Southport Corners in Southport.

Hudson Valley Railway, Glens Falls, N. Y.—This company has certified to the Secretary of State that it proposes to extend its line in Saratoga Springs from Lincoln Avenue to the North River Railway on East Avenue and Spring Avenue in Saratoga Springs.

***Shaker Heights Land Company, Cleveland, Ohio.**—This company is considering plans for building an electric railway across the Shaker Lakes Park connecting with the Cleveland Railway at Coventry Road. Henry J. Davis, secretary.

Pittsburgh & East Liverpool Electric Railway, East Liverpool, Ohio.—Interest has again been revived in the building of this proposed 25-mile electric railway to connect Beaver Falls, Columbiana, Palestine, Darlington, Leetonia, Waterford and East Palestine. J. M. Reed, Pittsburgh, president. [E. R. J., June 26, '09.]

Hocking-Sunday Creek Traction Company, Nelsonville, Ohio.—It is said that this company is making plans to extend its line in the spring. It has provided for a bond issue of $200,000.

Oklahoma City & Fort Smith Traction Company, Oklahoma City, Okla.—It is reported that this company will receive bids Jan. 1 for building its proposed 200-mile electric railway to connect Oklahoma City, Okla., and Fort Smith, Ark., via Shawnee, Henrietta and Muskogee, Okla. A 300-ft. bridge will be required across the South Canadian River, besides several small bridges. Officers: V. L. Bath, president; M. P. Mowery, vice-president; G. L. Woods, secretary; John Wild, treasurer, and Joseph Kreis, Oklahoma City, general manager and chief engineer. [E. R. J., Jan. 29, '10.]

Toronto & Eastern Railway, Toronto, Ont.—This company has completed surveys and will begin construction within a few months on its 100-mile electric railway to connect Toronto, Whitby, Oshawa, Brownsville, Lindsay, Port Hope, Uxbridge and Peterboro. R. H. Rothray, Toronto, superintendent. [E. R. J., Apr. 30, '10.]

Dallas (Ore.) Street Railway.—Frank P. Phillips has been awarded the contract to build this railway in Dallas. The ties will be laid in cement and the rails will be 90 lb. The line will be built for freight and passenger traffic and it will eventually be extended into the country. E. W. Thomas is interested. [E. R. J., March 26, '10.]

Lancaster & York Furnace Street Railway, Lancaster, Pa.—This company contemplates erecting a bridge over the Susquehanna River at Pequea.

Allegheny & Northwestern Railroad, Philadelphia, Pa.—John Schaffner, Butler, has been awarded the contract for grading a large section of line between Evans City and Harmarville. Grading has been begun near Evans City. This proposed 21-mile railway will connect Callery, Mars, Valencia and Bakerstown, and at Evans City with the Pittsburgh, Harmony, Butler & New Castle Railway and at Mars with the Pittsburgh & Butler Railways and the proposed Rochester & Mars Street Railway. J. G. McPherson, president. [E. R. J., Nov. 26, '10.]

Pittsburgh, Steubenville & Wheeling Railway, Pittsburgh, Pa.—This company has completed the surveys between Pittsburgh and Wheeling for the route for its proposed electric railway to connect Pittsburgh, Pa., and Wheeling, W. Va. W. E. Hilderbrand, Pittsburgh, is interested. [E. R. J., Oct. 22, '10.]

Washington & Claysville Street Railway, Washington, Pa.—This company, which is a subsidiary to the Pittsburgh Railways, expects to extend its line from the present terminus on West Chestnut Street down the Gordon Valley to Hayes Avenue. William Pickett & Company will begin work soon as most of the grading has been completed.

York & Glen Rock Railway, York, Pa.—Surveys have nearly been completed for this proposed 11½-mile electric railway to connect York, Glen Rock, Paradise and Loganville. Contracts have not yet been awarded. The Tennes Company, Magee Building, Pittsburgh, is interested. [E. R. J., Nov. 19, '10.]

***Rapid City, S. D.**—It is stated that an eastern syndicate has under consideration the building of an electric railway to connect Rapid City, Vale, Belle Fourche, Spearfish, Deadwood, Lead, Sturgis and back to Rapid City.

Bristol, Tenn.—The Bristol Board of Trade is considering the construction of an electric railway between Bristol and Kingsport. Samuel King is interested. [E. R. J., Nov. 26, '10.]

Corpus Christi & Interurban Railway, Corpus Christi, Tex.—Plans are being made by this company to extend its line from Corpus Christi to the Epworth League Grounds. V. S. Heinly, Corpus Christi, secretary.

Galveston-Houston Electric Railway, Galveston, Tex.—This company has laid and ballasted about 35 miles of track on its proposed 50-mile railway to connect Galveston and Houston. It is expected to have the line in operation in the spring. [E. R. J., Oct. 29, '10.]

Bay Shore Rapid Transit Company, La Porte, Tex.—It is said that this company expects soon to purchase steel and equipment for its proposed electric railway to connect La Porte and Houston via San Jacinto. O. L. Allen is interested. [E. R. J., Dec. 3, '10.]

Texas City Traction Company, Texas City, Tex.—This company is in the market for 300 tons of 40-lb. relaying rails for building its proposed five-mile electric railway in Texas

City from Bay Shore to Texas City Heights. Fordyce Ridley, Galveston, president. [E. R. J., Dec. 3, '10.]

Spokane, Portland & Northern Railway, Spokane, Wash.—It is said that this company, recently incorporated, will begin construction of its line between Spokane and Davenport about Jan. 1. The line will extend from Spokane to the international boundary near Nighthawk via Bridgeport and Duffin's Ferry. A. M. Dewey, Spokane, is interested. [E. R. J., Nov. 5, '10.]

SHOPS AND BUILDINGS

St. Joseph Valley Traction Company, Elkhart, Ind.—This company will build a depot at Ellis and has awarded the contract for building its new car house, 36 ft. x 36 ft., in Angola.

Syracuse (N. Y.) Rapid Transit Company.—This company is considering plans for building an addition to its terminal station in Syracuse, to cost about $100,000.

Northern Ohio Traction & Light Company, Akron, Ohio.—This company will move its car house at Cuyahoga Falls to a point just south of Akron, and the South Main Street car house in Akron will be moved to the same place.

Portland Railway, Light & Power Company, Portland, Ore.—This company expects to build a new warehouse and clubroom for its line department. It will also build a new car house with a capacity of 36 cars in the Piedmont district; also new consolidated shops for repairs and construction work. F. I. Fuller, vice-president.

Virginia Railway & Power Company, Richmond, Va.—This company will build a blacksmith shop at Richmond. The structure will be one story, of brick, concrete and steel construction. It is estimated that the cost will be $4000.

POWER HOUSES AND SUBSTATIONS

Pacific Electric Railway, Los Angeles, Cal.—This company has awarded a contract to the Westinghouse Electric & Manufacturing Company, Pittsburgh, for one 1000-kw and two 600-kw motor generator sets and three 475-kva and six 300-kva oil-insulated self-cooled transformers.

East St. Louis & Suburban Railway, East St. Louis, Ill.—This company is now extending its high-tension lines from the Bluffs about 4 miles east of East St. Louis, 4 miles farther east to a point near the old city limits of Belleville, where it will construct a new brick substation to contain 1000 kw in rotary converters. It is expected to have this substation in operation shortly after the first of the year. C. F. Hewitt, superintendent.

Tri-City Railway, Davenport, Ia., has purchased from the Westinghouse Electric & Manufacturing Company a 1000-kw motor-generator set, the motor end of which is a 2-phase, 4600-volt, 60-cycle a.c. machine, and the d.c. end a 600-volt railway generator.

Frederick (Md.) Railway.—This company will install a 750-hp engine in its power house at Middleton. O. B. Coblentz, chief engineer.

Portland Railway, Light & Power Company, Portland, Ore.—This company expects to build a new substation in the Mount Tabor district. It also expects to purchase three 3300-kw, 60-cycle generators for the Estacado power development now in course of construction. The company also has plans for the construction of a substation at East Sixtieth Street and Stark Street in Portland. The building will be 36 ft. x 40 ft., one story and of brick construction. It is expected to expend $40.000 for rotary generators and other electricity-making machinery to be installed at this new substation. F. I. Fuller, vice-president.

Holmesburg, Tacony & Frankford Electric Railway, Tacony, Pa.—This company has awarded the contract to Charles McCaul Company for the construction of an addition to its boiler house in Tacony. Henry Glazier, superintendent.

Galveston-Houston Electric Railway, Galveston, Tex.—This company has begun the construction of its power house near Webster.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—This company is installing two 14,000-kw and two 7500-kw Curtis turbo-generator sets in its Commerce Street station, which already had an existing equipment of 20,000 kw. Other important additions to the boiler and auxiliary equipment are being made at this plant.

Manufactures & Supplies

ROLLING STOCK

Tri-City Railway, Davenport, Ia., has placed an order with the Cincinnati Car Company for eight double-truck city cars.

Pennsylvania Railroad, New York, N. Y., is reported to be receiving bids for 80 electric cars, to be used on a subsidiary line.

Chas. P. Glover Realty Company, Atlanta, Ga., is considering the purchase of a gasoline motor car to carry more than 12 passengers.

Wilmington & Philadelphia Traction Company, Wilmington, Del., in accordance with a resolution adopted by the directors of the company on Dec. 2, 1910, will purchase 10 double-truck semi-convertible cars.

Detroit (Mich.) United Railway advises that it is planning to convert 20 double-truck open cars to closed pay-as-you-enter cars and that the work will be done in the G. C. Kuhlman Car Company's shops at Cleveland.

Northern Ohio Traction & Light Company, Akron, Ohio, reported in the ELECTRIC RAILWAY JOURNAL as considering the purchase of several cars, is receiving bids for eight interurban cars, 10 semi-convertible cars and seven double-truck city cars.

Pittsburgh (Pa.) Railways has ordered 50 steel cars from the Pressed Steel Car Company. The new cars will be practically the same as the steel cars of series 4000, now in operation, with the exception that a number of minor improvements on that type have been made. The cars will be 46 ft. 8 in. long, and each will have a seating capacity of 56 passengers. One improvement over the original 4000 type cars will be the use of steel posts to add strength. The rear platform will be made longer and the two rear doors will be widened to permit of the easier entrance and exit of passengers. Rattan will be used on the longitudinal seats.

Illinois Traction System, Peoria, Ill., has placed an order with the Browning Engineering Company for an electrically operated wrecking crane. This equipment will weigh 130,000 lb., and will have capacity for lifting 30 tons. It has also placed an order with the same company for one 17-ton lifting capacity locomotive crane, electrically operated, to work at 48 ft. radius, intended for unloading coal from submerged storage bins and for general loading work. Both cranes are to be mounted on double trucks arranged for interurban and city track operation. They have 33-in. rolled steel M.C.B. wheels. Each crane is self-propelling, and is arranged so that the gears can be disconnected from the driving axles and the cranes be hauled in freight-train service. They are equipped with Westinghouse automatic and straight-air brakes.

Fairmont & Clarksburg Traction Company, Fairmont, W. Va., noted in the ELECTRIC RAILWAY JOURNAL of Oct. 15, 1910, as having ordered six single-truck cars from the Jewett Car Company, has specified the following details for these cars:

Seating capacity.....28	Underframe .....wood
Weight (car body only), 8000 lb.	Car trimmings.....bronze
	Couplers .....Jewett
Length of body.....20 ft.	Curtain fixtures....C. S. Co.
Over vestibule.....30 ft.	Curtain material....Pantasote
Width over sills...7 ft. ½ in.	Hand brakes...Jewett geared
Over posts at belt.....8 ft.	Heaters .....Consolidated
Sill to trolley base.....9 ft.	Headlights .....incandescent
Height from top of rail to sills.....2 ft. 5 in.	Sanders.....foot sander
	Seats .....longitudinal
Body .....wood	Seating material.....rattan
Interior trim.....cherry	

TRADE NOTES

Rail Joint Company, New York, N. Y., has its general offices to the Cameron Building, 185 M Avenue, New York.

Brady Brass Company, Jersey City, N. J., will erec tory on the north side of Fourteenth Stree Street and Henderson Street, Jersey Cit the necessary plans are completed.

S. A. Staege has resigned as sales engineer with the Buffalo office of the Allis-Chalmers Company, and has opened a consulting engineering office in the Smith Building, Watertown, N. Y.

Cornell S. Hawley, vice-president and general manager of the Consolidated Car Heating Company, has also been elected treasurer of the company to succeed Frederic Pruyn, who resigned to go into other business.

Grip Nut Company, Chicago, Ill., has appointed Thomas P. Swan Northwestern representative, with headquarters at 315 Minnesota Street, St. Paul, Minn. Mr. Swan was at one time connected with the mechanical department of the Great Northern Railroad.

Toledo-Massillon Bridge Company, Toledo, Ohio, has changed its name to the Toledo Bridge & Crane Company, in order more fully to cover its complete line of hand and electric cranes and hoists, coal and ore handling machinery, and grab-bucket machinery.

H. W. Johns-Manville Company, New York, N. Y., has removed its offices, now located at 85 Shelden Street. Houghton, Mich., to more commodious and convenient quarters at 96 Shelden Street. As in the past, S. T. Harris, who has been associated with the company for a number of years, will be in charge of the offices at the new address.

R. D. Nuttall Company, Pittsburgh, Pa., which has had a good many case-hardened gears and pinions in service for some time, has announced now that experience has shown that the case-hardened gears perform well under severe conditions. The company will hereafter make case-hardened gears and pinions a part of its regular lines.

Adams-Bagnall Electric Company, Cleveland, Ohio, has purchased the business of the Jandus Electric Company, Cleveland, and will continue the manufacture of Jandus products. The Adams-Bagnall Electric Company has associated with it the former management of both the commercial and engineering departments of the Jandus Electric Company.

McKeen Motor Car Company, Omaha, Neb., has delivered a 70-ft. motor car and 31-ft. trailer car to the Chicago-Great Western Railroad. The company has also delivered a 55-ft. motor car to the Woodstock & Sycamore Traction Company. This is the second car of this design operated by that company, the first car having been in service since last July.

Massachusetts Chemical Company, Walpole, Mass., manufacturer of liquid electrical insulation, tapes and splicing compounds, is moving into the extensive additions to its plant at Walpole, Mass., which comprise a new four-story manufacturing building, a four-story reclaiming building and a new power plant, together aggregating about three acres of floor space.

Midvale Steel Company, Midvale, Pa., has awarded the contract for the construction of a wheel plant at Nicetown, Pa., to W. W. Lindsay & Company, Philadelphia. The plant will be a one-story building, of steel and corrugated iron, 82 x 170 ft. The contracts for the mechanical equipment have not yet been placed. Work is to be started at once and completed this winter. The cost of the plant will be about $17,000.

H. M. Byllesby & Company, Chicago, Ill.—The second annual convention of the managers and department heads of this company and its affiliated companies will be held at the Congress Hotel, Chicago, January 17-20, inclusive. The company operates and manages a considerable number of electric, gas and street railway properties in the West and South. Since the first convention, held last year several properties have been added to the list, and the former attendance of 200 will be largely increased. At a recent meeting of a committee of managers preliminary arrangements were made for a four-days' program to be devoted technical and professional subjects.

eter Smith Heater Company, Detroit, Mich., has equipped of the cars of the Metropolitan West Side Elevated ad, Chicago, Ill., with its No. 1-P, forced-ventilation, car heaters. On Monday, Nov. 28, a demonstration de of the installation before a number of represen- elevated and surface railways of Chicago. Fifth Avenue terminal station and was ain line and the Douglas Park branch of the Metropolitan West Side Elevated Railroad. Very satisfactory and efficient tests were made during the trip. The car on which this system is installed will be operated in regular service during the winter months.

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., reports that the trial Westinghouse hand-operated, unit-switch control equipment installed last April for the Fort Wayne & Wabash Valley Traction Company has proven so successful that an additional order for the same apparatus has now been placed. A similar result followed the initial installation of this control on the Mahoning & Shenango Valley Railway & Light Company and the Fairmont & Clarksburg Traction Company. Among those placing recent orders with the company for HL control equipments are these roads: Ohio Electric Company, Illinois Traction System, Peoria Railway & Terminal Company, Winona Interurban Railway, Indiana Union Traction Company, Alton, Jacksonville & Peoria Railway.

ADVERTISING LITERATURE

MacGovern, Archer & Company, New York, N. Y., have issued several circulars calling attention to direct-current dynamos and motors in voltages ranging from 110 to 250, which they have in stock for immediate shipment.

Western Electric Company, New York, N. Y., has issued bulletin No. 1116, describing and listing magneto telephone sets and accessories. It contains 40 pages and is profusely illustrated with photographs. Several pages are devoted to the design and construction of wall desk sets, and the No. 1317 type wall set is fully described.

Crouse-Hinds Company, Syracuse, N. Y., has issued an 80-page catalog of switchboard panels and cabinets. Details of construction are described, and lists of prices of individual and assembled parts are presented. Panels and cabinets are listed separately and together. The catalog, which is 9 in. x 12 in., is profusely illustrated. It is printed in two colors on heavy coated white paper.

Speer Carbon Company, St. Marys, Pa., has issued a booklet which is quite a departure from the usual carbon brush catalog. In addition to the description of the standard brushes, data and curves are presented on specific resistances, co-efficients of friction at certain temperatures and pressure and the normal current densities. The conditions under which the data were obtained are also given in detail. The booklet contains views of a portion of the company's well-equipped testing laboratory.

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., has issued circular No. 1188, describing a line of Westinghouse alternating-current slip-ring motors, designed especially for cranes, hoists and elevators. Reference is also made to suitable controlling devices and brakes. The company has also issued its part catalogues Nos. 6141 and 6143. No. 6141 lists parts for Westinghouse type 306 interpole railway motor for direct-current circuits. No. 6143 lists standard metallic brushes for a.c. and d.c. circuits.

Robert W. Hunt & Company, Chicago, Ill., have published a small pamphlet on the inspection of rails for street and interurban railways. It is designed to give the purchaser of rails some idea of the value of inspection through all the stages of manufacture by trained and reliable engineers. The pamphlet includes a reprint of the specifications for open-hearth rails proposed by the committee on way matters of the Engineering Association, the standard specifications for open-hearth rails recommended by the Lorain Steel Company and used with slight modifications by the Pennsylvania Steel Company, and a brief description of the process of rolling girder and high T-rails. A list of nearly 100 steam and electric railway companies which are clients of R. W. Hunt & Company is printed in the back of the pamphlet.

NEW PUBLICATION

Compendium of Applied Electricity. David McKay, Philadelphia, 1910. Price in cloth binding, 25 cents; in leather binding, 50 cents.

This vest-pocket booklet, while rather crudely illustrated, contains many data which are of value both to the engineer and shopman. A considerable portion is devoted to railway motors and their appurtenances. There is included a dictionary of electrical terms and phrases.