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THE INDIANAPOLIS STRIKE

We are glad to learn that Governor Ralston of Indiana has taken the question of the enforcement of order in Indianapolis out of the hands of the Mayor of that city. During the first few days of this week the disorder and destruction of property which prevailed there on account of the strike on the lines of the Indianapolis Traction & Terminal Company was a disgrace. It justified the common criticism upon our country on the part of many keen observers from abroad that there is far too general a disregard for the law. We do not mean that the condition of affairs in Indianapolis has been any worse this past week than that which has prevailed in other cities in the past, but this is no excuse. It seems as if in one of our large cities the call of a strike agitator is all that is necessary to precipitate a condition of disorder and bloodshed practically as bad as that experienced in regular warfare. In some respects war is more merciful. As it is usually preceded by some warning, each side can arrange for the conflict. But during a strike the property of persons engaged in peaceful occupations may be swept away over night, and there seems to be no redress. The threadbare excuse offered by the labor leaders in Indianapolis that the disorder there is not being caused by the strikers but by the hoodlum element is being brought forward, but its inadequacy is apparent. If the leaders of the strike did not think that they would profit by this intimidation, destruction and murder, they could easily restrain their followers, and they are morally, if not legally, as responsible as those who commit the actual crimes.

INFORMATION FOR CITY RIDERS

Nowadays many city railways publish a great deal of travel information, but as a rule the data are compiled to meet the needs of the pleasure rider only. When a stranger tries to find his way about town, or when

a resident desires to travel to an unfamiliar section, he is likely to encounter some difficulty in learning just what route will bring him nearest to his goal. In London, Berlin and other large cities it is customary for the local tramway company to publish at a nominal price a street railway guide which meets almost every possible condition. However, if a railway company considers such a publication to be too great a burden, it would be of help if it made some other provision for guiding the stranger, especially at its terminals and waiting rooms. Thus a very convenient form would be to list the route names alphabetically and also show the number of the nearest house on the cross street. This is practically the plan followed in the pay station directory of the New York Telephone Company, in which all addresses are listed alphabetically in conjunction with the number of the nearest house on the intersecting street. By this means the stranger would be saved much annoyance and loss of time. The need for some aid of this kind is illustrated by the fact that on one of the large systems near New York no information either printed or oral is obtainable at a terminal from which some ten routes are operated. At such a place one starter cannot be expected to answer inquiries continually, nor is the average conductor in the humor to make explanations while a large number of people are entering the car.

SCIENTIFIC CAR LIGHTING

We have commented before on the difficulty, from the standpoint of the illuminating engineer, of securing proper lighting in a car body. But, in spite of the fact that reading in cars is injurious to the eyes, most passengers insist on doing it, regardless of whether the light is intense enough or not, and this fact must be considered in selecting types and candle-powers of lamps. The tungsten lamp has, of course, revolutionized car lighting by making it practicable to furnish lighting of excellent quality and ample quantity without excessive expenditure of power, and with plenty of light at command it has now become important to distribute it uniformly and to avoid glare. Indeed, with these intense light sources, the practice followed with carbon filament lamps is highly objectionable. Various schemes of indirect and semi-indirect illumination are being tried out, and the judgment of the public is being sought as to the results. Some excellent data from Toledo, showing the results of actual measurements made with different kinds, numbers and arrangements of lighting units, are given elsewhere in this issue. These show that it is practicable to secure intensities of 4 foot-candles or more at the reading level with the expenditure of about 0.5 kw in a standard city car, and that with semi-indirect lighting. This is fine reading illumination, and the general effect in the car is delightful. The power expenditure is less than was formerly used with carbon lamps, and, in spite of the diffusion of light, the mean

intensity is much greater. This is a good example of the rate at which illuminating engineering has progressed, although there is still so much inadequate illumination in evidence that some improvement is possible almost anywhere. It is, in consequence, a matter which may well be taken up by any railway manager with excellent possibilities for satisfactory results.

HAS BOILER INSURANCE BECOME A GAMBLE?

An account of an examination of the boiler which recently exploded with fatal results in the power plant of the Richmond Light & Railroad Company is published elsewhere in this issue. It shows, without necessity for any great degree of practical experience with boilers, that the disaster was due solely to the failure of a plate whose progressive deterioration should have been discovered long before it reached the dangerous stage. The cracks in the plate into which a knife blade could be inserted $\frac{1}{4}$ in. certainly did not grow overnight, and since a plain indication of the corrosive action of the feed water was given by still deeper cracks which were clearly distinguishable at the angles of the crow-foot braces, there is overwhelming evidence that not even the most elementary inspection had been made for a long period.

The explosion, which cost a total of seven lives, might easily have been avoided had only the most obvious defects been seen, because it is hardly likely that the weakened plate, rotten with pitting as it was, would have suddenly let go if all the crow-foot braces had been holding. The boiler, it should be stated, was of the vertical water-tube type with large drums top and bottom and for this reason was more susceptible to disastrous explosion than one with smaller drums. At the same time, inspection was greatly facilitated. Expert advice had been employed by the railway in the form of a steam-boiler insurance policy with a presumably reputable casualty company, and its supervision, together with the less directly interested inspection of the city authorities, certainly entitled the railway to the belief that its boilers would not be allowed to develop dangerous defects. Precedent warranted this position, because very few steam users can have boiler experts among their regular employees and dependence upon boiler insurance has become universally accepted practice. Now it appears that at least in one case this confidence has been misplaced. What assurance exists that there are not many others?

Deliberately or negligently the premium for this insurance seems to have been applied not to meet the expense of proper inspection but instead put up as a wager at long odds that the boiler wouldn't explode. If that is what the boiler insurance companies are doing, it is high time that the states, instead of feebly attempting the herculean task of inspecting individual boilers, should devote their energies to inspecting the boiler-inspecting companies. A gamble which may result in the extinction of seven lives at one losing turn of the wheel is too ghastly a game to be permitted, and if the public authorities will not act and act promptly, it is the duty of every owner of steam boilers to check the inspection work of his insurance company himself.

HYPOTHECATION OF UNISSUED BONDS

The recent warning of the Board of Public Utility Commissioners of New Jersey to companies under its jurisdiction not to pledge bonds as securities for loans before the commission has legally approved the issue of the bonds brings up an interesting point in corporation finance. The reason given by the board is that such hypothecation creates a liability that may force the public sale of the bonds at a later date and thus virtually bring about a flotation of securities without the approval of the commission. Such a contingency may seem remote, but it is possible, and its effect would not only be to put an "unauthorized" bond issue on the market but the utility would still owe the balance of its loan to the lender as well as the full face value of the bonds to their holders. Of course, this would be the case even if the use of a company's bonds as collateral for its loan should receive the authorization of the commission, a fact which makes particularly poignant the reticence of the New Jersey commission as to whether public utilities are permitted at all by statute to hypothecate their securities. Until a specific case arises the exact attitude of the commission cannot be known with certainty, but from the tone of the memorandum it would appear either that an authorization of bonds for the purposes of hypothecation will not be granted to the utilities or that, if such permission is given, the securities, to be valid, must be accounted for, in case of forced sale, at the 80 per cent or 75 per cent of the par value designated by the public utility law as the minimum rate of insurance.

There is no doubt that the necessity for short-time loans often rises suddenly and that heretofore bonds have frequently been used for their hypothecation. In the light of the recent warning, however, it might be well for the companies to try to prevail upon the banks to take their short-time notes without collateral security or else with some of the company's investment securities as collateral instead of their own bonds. In case this proves too difficult, there remains an alternative plan, the use of a blanket mortgage and a single type of bond instead of the usual piecemeal mortgage and securities as diversified as Joseph's coat.

The most advanced teaching in corporation finance, we believe, is that which declares the desirability of having all the indebtedness of a company converted into one standard form of security, to be available at all times not only for expected or unforeseen financing but also for refinancing purposes. The world-wide scramble for capital has amply demonstrated that he borrows best who borrows on a uniform, well-known security, instead of presenting heterogeneous evidences of indebtedness that only complicate the financial books and the relations with creditors. The complexity and inexplicability of some electric railway financing since the advent of holding companies makes us welcome alike for the public, the lenders and the electric railways themselves the use of limited open-end or pure open-end mortgages, such as are exemplified by the latest Pennsylvania Railroad and New York Central Railroad proposals. Whether a definite mortgage principal is fixed or not, the idea is that provision is made for a reservoir of authorized credit ample for years to come and so carefully

guarded by the mortgage agreement that it cannot be abused or dissipated. Under such a mortgage, bonds may be issued from time to time as the directors of the company and the public service commission deem necessary and wise.

A large part of the delay of public service commissions in passing on bond issues is due to bickerings regarding interest rates, the proper type of security to be issued and the complexity of the existing capitalization, but all this could be avoided by obtaining once for all the authorization of a standard security. Then, in each case where the company desired to issue a certain portion of bonds under the blanket mortgage, there would be left only the necessity of showing the need. And to say that the consent of a public service commission cannot be acquired quickly enough in the time of emergency or catastrophe is rather a travesty upon the clear thinking and decisiveness of men chosen as commissioners. The desired authorization of securities will be granted with as much rapidity as the need therefor is shown with thoroughness and truth. This unification of a company's mortgage plan and the resulting possibility of borrowing quickly for any occasion is much more in line with modern financing than a temporary miscellaneous short-time loan system with its now, more than ever, apparent difficulties.

THE MEETING OF COMMISSIONERS

The meeting of the National Association of Railway Commissioners in Washington last week is clear proof of the fact that regulation of public utilities is a condition, not a theory. When the regulative policies of the states were less powerful the meetings of this association seemed to deal with possibilities rather than with actualities. The meetings have changed because conditions have changed.

With the exception of one report, the proceedings seemed from a corporate standpoint to be less radical than in former years. This is partly because the corporate point of view has been altered. That which sounded very radical a few years ago has now an appearance of reasonableness. At the same time we believe that there has also been a modification in the point of view of some of the public officials charged with the duty of regulation. This change is less easy to define or illustrate than the one in the corporate point of view, but it is the kind that usually comes logically from the sense of approaching responsibility or from continued responsibility. Although neither the organization of the Interstate Commerce Commission for the pending federal valuation of railways nor the details of the work have been planned, this stupendous task has brought a sobering sense of responsibility to more than one regulating official in the country.

One of the expressions which received much attention at the meeting was that of Chairman Clark of the Interstate Commerce Commission. He said that it would be a mistake to undertake to correct the present financial condition of transportation agencies, even if that was due to reckless or dishonest financing in the past, by a policy of reprisal which would impair the usefulness or efficiency of carriers. Chairman Clark did not say that he approved of increases in rates, but it is scarcely thinkable that he would have committed himself publicly on a subject of such

importance. He did not dwell, however, on that extension of power to regulate which some of the members of the commission are said to want.

The most extreme view presented at length during the meeting was contained in the report of the committee on railway capitalization, written by Mr. Eshleman, member of the California Railroad Commission. Most of the report of this committee was adopted, however, and if this acceptance of the recommendations may be taken as the final conclusion of the members of the association, those in attendance at the Washington meeting seek full authority over the issue of securities, not only for the state commissions so far as their properties are concerned, but also for the Interstate Commerce Commission so far as interstate carriers are concerned.

The sobering word on this point was spoken by Commissioner Meyer, of the Interstate commission, who was a member of the Railroad Securities Commission appointed by President Taft. Mr. Meyer, whose remarks on this point were published in last week's issue, said that not a single thing was done under the Wisconsin stock and bond law which could not have been accomplished under the act recommended by the Securities Commission without the assumption by the regulating body of either legal or moral responsibility. This view is confirmed by the opinion of Chairman Roemer of the Railroad Commission of Wisconsin. Mr. Roemer was the author of the Wisconsin stock and bond law, but the experiences of the commission under the authority which it imposed have changed his views. It is significant that those who have had to administer the act which the report declares is "one of the most carefully worked out stock and bond laws now in effect" hesitate to recommend regulation in that direction, and that those who have not had this experience should favor such measures. We have frequently expressed our judgment that the supervision and approval of issues of securities by the state involves a moral if not a legal responsibility from which investors will not hold it to be free in the event of loss. Bankers like the approval of commissions on securities because it helps the sales. But, as the Railroad Securities Commission has pointed out, either the approval of the state on new securities means nothing or it means more than the public ought to permit to mean.

Although the subject of valuation of railroads received more attention during informal conferences at the time of the association meeting than at the actual business sessions, the scope of the report of the committee on railroad taxes and plans for ascertaining fair valuation of railroad properties was enlarged to take in questions relating to the valuation of all utilities. This report, of which an abstract was published in last week's issue, fixes attention on the varied views on the different elements of valuation. It shows why companies should be ready to present their views in such a reasonable way that they will stand the test of commissions, courts and public opinion. A fair recognition of public interest is just as essential as a fair recognition of corporate interest.

The meeting of the commissioners makes their views known. The views of the companies should be known just as well, because a policy of full publicity in these matters will help to establish a fair middle ground of settlement.

New Carhouse of the Muskogee Electric Traction Company

A New Carhouse and Shop at Muskogee, Okla., Combines Unusual Features in Building Design, Spacious Trainmen's Quarters, Effective Shop Equipment and Novel Inspection Pit Construction

A new combination carhouse and general repair shop has been completed recently by the Muskogee Electric Traction Company, Muskogee, Okla. The arrangement of the building as well as the design of details embodies a number of distinctive features well worthy of mention. Facilities for handling heavy parts of equipment were installed to aid in keeping the repair force at a minimum, and the scheme of operating the repair shop as well as the storeroom has resulted in great economy.

ARRANGEMENT OF TRACKS AND BUILDINGS

The new carhouse and shops are situated at the north-eastern limits of the city of Muskogee on a triangular-shaped piece of property the hypotenuse of which parallels

San Francisco Railroad, a steam road on an adjoining right-of-way.

The shop and car-storage portions of the building are respectively 32 ft. x 155 ft. and 120 ft. x 144 ft. in plan. The former is two stories in height and is of brick, steel and reinforced-concrete construction, while the latter consists of a structural steel frame on concrete foundations inclosed with corrugated ingot-iron roof and siding. The first floor of the shop building section is occupied by the car repair department, and the second floor serves as a trainmen's clubroom and a reserve stock storage room. Seven counterbalanced structural-steel doors 12 ft. wide by 9 ft. high provide passageways between the shop and



Muskogee Carhouse—Front View of Shop and Carhouse

the main track. It is 750 ft. long on one leg and 900 ft. long on the other, so that an area more than sufficient for present shop and yard requirements is provided. The track layout was designed to meet conditions of future expansion, that is, with a view to occupying the whole area. As shown on the general plan, the trackage is in the form of loops which provide ingress and egress either from the front or rear of the carhouse. The building site was selected at the approximate center of the long leg of the triangle, which permits of shop expansion to the south and additional carhouse storage capacity to the north. The triangular portion remaining between the shop and the main line will be utilized as a material yard.

Twelve tracks entering the building are built at right angles to the ladder approach, and are connected to it by 50-ft. radius curves with built-up tongues and mates at the turnouts. Two storage tracks extend the full length of the shop property. These are parallel to the main track to Hyde Park, the company's pleasure resort on the Arkansas River. Cross-overs at both ends of the shop property, between the main track and these storage tracks, facilitate train movement to and from the shop tracks. In addition to being accessible from the street railway lines, the carhouse site is served by a connection to the St. Louis &

carhouse. The track adjacent to the repair shop section was not built over an inspection pit, but the remainder of the interior storage tracks are on open structural-steel trestles over one large inspection pit. This pit occupies practically all the carhouse floor, being 104 ft. by 126 ft. in plan and 5 ft. 3 in. in depth.

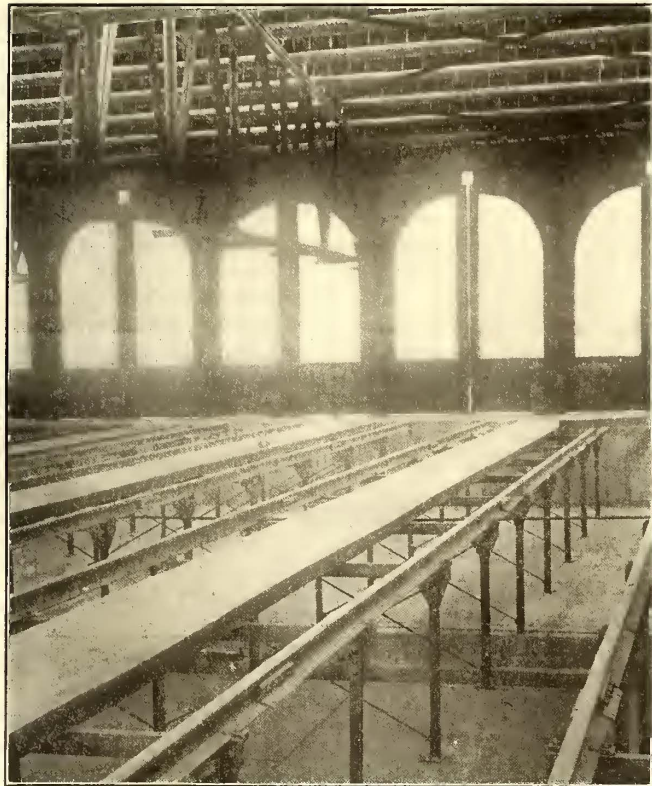
A transverse pit crosses this inspection pit near the center of the building and extends into the repair shop bay. This transverse pit is 3 ft. in depth by 8 ft. in width and is built in the floor of the inspection pit. It serves as a runway for a car used in the removal of repair parts between the large inspection pit and the shop bay. In order to accommodate the transfer car the pit is provided with runway rails. The height of the car was made the same as the elevation of the inspection pit floor. This permits repair parts to be handled from the inspection pit to the transfer truck without lifting. At the repair shop end of this transfer pit an air hoist has been installed to elevate the car to the shop floor level.

Heretofore the daily inspection has been made by one man who moved each car over a pit of sufficient length to accommodate two cars. If he performed his duty according to instructions it was necessary for him to walk 21 miles to inspect fifteen cars properly. This was an impossible

task during the hours in storage, and the single large inspection pit has greatly reduced the amount of walking necessary as it permits the inspectors to examine all cars from below without moving them. In addition to this facility, transverse and longitudinal running boards supported on the roof trusses have been installed to reduce climbing over cars to a minimum. Present practice with the new facilities is to inspect from the pit first, then from the floor level and finally from the overhead running boards.

BUILDING CONSTRUCTION DETAILS

The materials used in the design of the repair shop and trainmen's quarters section of the building included concrete, steel and brick. The exterior walls are 13 in. thick, faced with dark cherry-red paving block and backed with common brick. Architecturally, the exterior is quite plain. It is typical of factory building construction with unadorned brick walls corbeled five courses at the top and finished with a concrete coping. Liberal natural illumination and ventilation are supplied in the repair shop through



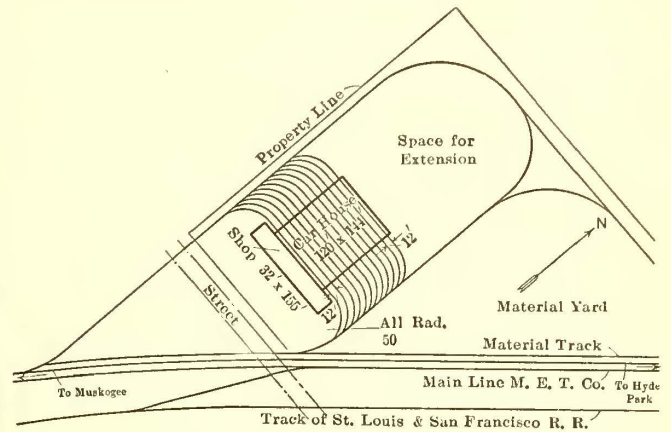
Muskogee Carhouse—Open Pit Construction

twin window openings 10 ft. 6 in. wide by 10 ft. 9 in. high, spaced at 17-ft. intervals. These openings are inclosed with Fenestra steel sash, and each window is provided with a six-light pivoted section for natural ventilation.

The second floor of the shop bay also is equipped with a liberal spacing of single windows with sliding sash. A structural steel frame supports the floor and roof in this section of the building except at the exterior walls, where the floor beams rest direct on the masonry. The floor construction includes a 4-in. reinforced-concrete slab, containing 0.180 sq. in. of steel per foot of width. The roof is constructed in a similar manner and contains 0.165 sq. in. of steel per foot of width. A five-ply tar and gravel roof covering has been applied over the reinforced-concrete slab to waterproof it thoroughly.

The structural steel frame in the repair shop serves as a means of attaching the car storage section superstructure. It also makes possible the installation of the seven large counterbalancing lifting doors in the partition between the two sections. Unusual features embodied in the carhouse

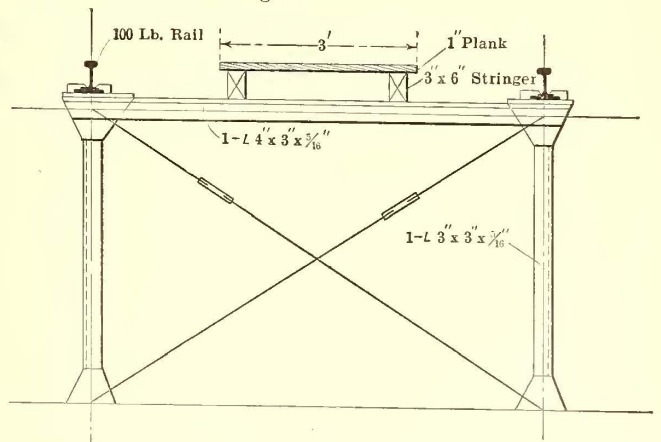
construction in addition to those already mentioned are found in this design of the supporting steel frame. The carhouse floor is clear of columns, a desirable condition obtained by the use of roof trusses set parallel to the tracks. This arrangement required trusses 120 ft. in length and 15 ft. in depth at the ridge of the roof. With walls at



Muskogee Carhouse—Plan of Building and Tracks

the end of the trusses 17 ft. 9 in. in height, only 10 ft. of clear head room was obtained under the lower cords. However, this was not objectionable as the tracks were spaced so that the trusses came in the aisles between them. This arrangement also permitted the angle brackets to be attached to the lower cords which carry one of the overhead runways used in car inspection. Both the roof and the side walls of this self-supported steel building frame were inclosed with No. 20 and No. 22 gage corrugated ingot iron which is securely fastened to the steel frame by clips riveted to the roofing and spaced at 12-in. intervals. An inclosure of this character would be impracticable if it had been intended that heat should be provided in the carhouse, but as this was not the case it serves very well.

The track entrance doors are quite unusual as they are built of structural steel with pressed steel sash and wire glass. Practically the entire area of each pair of doors, which are 12 ft. wide by 16 ft. high at the center of the arched opening, is inclosed with wire glass. A small notch cut in the doors at the point where they join at the crown of the arched opening permits a trolley wire entrance. The wire is carried on span wire construction, both inside and outside the building.



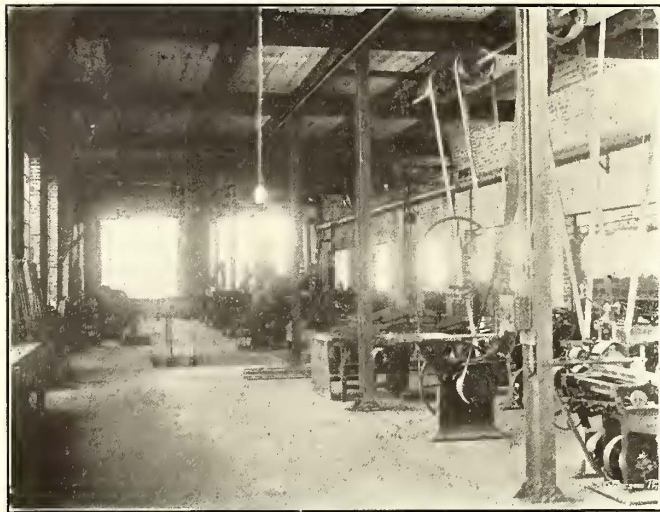
Muskogee Carhouse—Cross Frames for Pit Track Supports

In addition to the provision for natural illumination in the carhouse doors on both sides of the building, a monitor extending over all tracks has been included in the design of the roof. It is 12 ft. and projects 7 ft. above the level of the roof. Each side is inclosed with metal sashes which extend the full length of the building. Frequent pivoted

panels in the monitor sash area provide natural ventilation.

INSPECTION PITS

Probably the most unusual feature in the carhouse is the inspection pit design. As already explained, a single pit sufficient in size to cover all tracks has been constructed in the carhouse floor. Tracks over this pit are supported on columns made of a single 3-in. x 3-in. x 5/16-in. angle with



Muskogee Carhouse—General View of Repair Shop

a gusset plate at the top to serve as a point for attaching a strut, two diagonal tie rods and the rail clips. Two angle lugs at the bottom serve to spread the load on the concrete pedestals and as a means of anchoring the supporting structure to the pedestal foundations. These track columns are spaced 9 ft. 6 in. apart and are built in bents similar to bridge buck braces. They are paired to support the rails of parallel tracks, and are stiffened diagonally by round tie rods with turnbuckles for adjustment. A 4-in. x 3-in. x 5/16-in. angle between columns serves as a strut to prevent overturning and as a support for the walkway between the tracks. In order to provide sufficient girder strength between the pit columns 100-lb. A. S. C. E. rail has been used to span the 9-ft. 6-in. interval between them. The method of fastening the rail at the columns is by means of clips bolted to the horizontal leg of the structural angle strut.

Artificial illumination in the pits is obtained from pipe conduit which extends across the center and ends of the building, with a liberal spacing of outlets and sockets. This arrangement permits an inspector to insert a plug attached to a long flexible cord at the nearest outlet, and the lamp may be carried to any point desired within the range of the cord. Tungsten lamps furnish general illumination. These are swung from drop cords attached to overhead electric circuits in pipe conduit. A general view of the car storage bay is shown in the illustrations.

SHOP EQUIPMENT

The shop machine tools, which include those required for general repairs, have been arranged so that the small force may work to the best advantage. All tools are driven by a motor mounted on a shelf at one end of the shop, which is belt-connected to a system of line shafting. Other equipment in the building designed to facilitate repair work includes three pairs of air jacks used to raise car bodies. These have been installed in the floor beside the track adjacent to the repair shop bay. Two pairs of jacks serve for single-truck cars, and one pair of this set and the third pair of jacks are used for double-truck cars.

The method of providing a compressed-air reservoir in the shop department also is novel. This consists of a 10-in. pipe, 110 ft. in length, supplied from an air compressor at one end of the shop. It is supported on malleable-iron

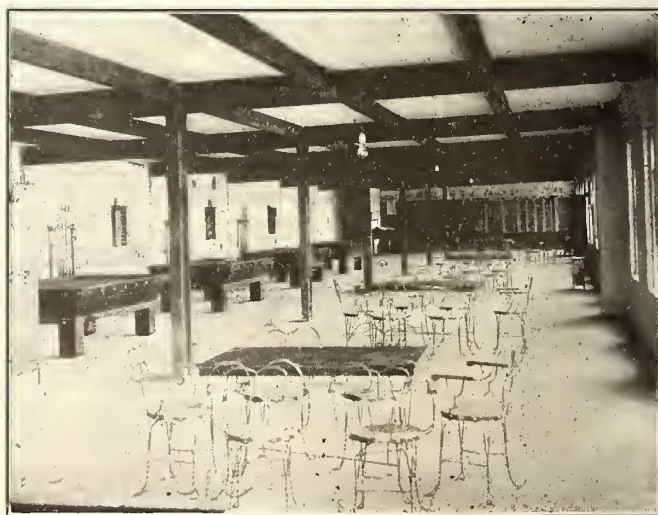
brackets, above the doors in the partition between the shop and carhouse. Several taps in the pipe make compressed air available at any point in the shop. This type of reservoir was employed because it made the full reservoir pressure available at each tap. It also serves both as a reservoir and pipe system for compressed-air service.

Another feature worthy of mention is the workbench for general use at one end of the shop floor. This is built with 4-in. pipe and floor-flange legs to which a 1/4-in. sheet steel top has been securely attached. While a bench of this construction is more expensive than a wooden one, it is especially adapted for rough work. In many instances it takes the place of an anvil and its life is unlimited.

A trainmen's club room with the usual equipment such as pool, billiard and card tables occupies a portion of the second floor. Individual steel lockers for trainmen's use also have been installed at one end of the club room. One side of the partition between the club room and the stock room serves as a blackboard for official notices.

The method of handling the repair shop stock is quite novel. A wire cage stock room has been installed on the shop floor, where all materials for general repair work are kept. The shop foreman has charge of this room and from time to time issues orders for additional supplies from the reserve stock room on the second floor. Reserve supplies are kept in lots based on the maximum monthly requirements. Each month the shop stock cage is replenished with the maximum monthly allotment of each kind needed from the reserve stock. No reserve supplies are removed, however, without an order on the general superintendent.

From time to time the reserve stock is invoiced to check the amounts shown on the orders received. This system of handling supplies serves two purposes: first, only a small quantity of any material need be carried in the shop stock room, which permits the use of minimum space; second, the necessity for a special clerk to look after supplies is obviated. The men are placed on their own responsibility as to quantities of materials used. The foreman has a check on his men as he knows just how much material has been placed at his disposal. The general superintendent has a check on the foreman because he knows how much material has been issued to the shop by referring to the orders, and



Muskogee Carhouse—General View in Trainmen's Quarters

these may be checked against the supplies in the reserve stock room.

Many of the features in the design of the Muskogee Electric Traction Company's repair shops and carhouse, as well as their operation, are entirely new. They were conceived by R. D. Long, general manager, who directed the design and construction.

Reports of Railway Commissioners

Abstracts of Reports of Committees Presented at the Meeting Held in Washington, Oct. 28 to 31—Electric Railway Accounts, Rails and Equipment, Safety Appliances and Legislation
Among the Topics Considered

Supplementing the reports of committees of the National Association of Railway Commissioners published in last week's issue, abstracts of other reports are published herewith. The report of the committee on statistics and accounts of electric railways, which is printed this week, was not discussed during the meeting of Oct. 28 to 31.

REPORT OF COMMITTEE ON RAILROAD EQUIPMENT

The committee on rails and equipment, of which James E. Sague, New York Public Service Commission, Second District, is chairman, discussed first the subject of rails and rail failures. The report cited the rapid increase in the manufacture and use of open-hearth rails as compared with Bessemer rails and the smaller number of failures in the open-hearth rail. It also referred to the report of the rail committee of the American Railway Engineering Association on this subject. This report said that while the average rate of failure of the open-hearth rail was lower than that of the Bessemer rail, both were higher than last year. However, the theory that possibly as the age of the open-hearth rail increased so as to approach that of the Bessemer rail the rate of failure would increase is not corroborated. The production of both classes of rail during 1912 in this country was: Bessemer, 1,099,926 tons, and open-hearth, 2,105,144 tons. The committee believed that such failures as have occurred in both types of rails can be attributed very largely to the great increase in speeds and weights of trains and also to severe track conditions, especially during winter operation. The trouble seems to be confined to railroads handling large amounts of fast and heavy traffic, although their standard of maintenance is much above that of the small roads and the latter have few or no failures. The report said that the best information on the subject of the cause of rail failures is contained in the report No. 31 of the American Railway Engineering Association. The report also said that there is no reason for believing that foreign rails are on the average of better quality than American rails.

SPEED RECORDERS

The report referred to the practice of a number of steam railroad companies in using speed indicators and speed recorders. The committee felt that much caution should be exercised in recommending the adoption of any additional apparatus for train operation, but that the advantages to be secured both in economy and safety from a reliable speed recorder are sufficient to justify extensive and thorough trial of this device.

STEEL CARS

The report said that a rapid introduction of steel cars seems to have started with the electric operation of New York City terminals and from the necessities of electric subway service. Statistics from a large proportion of the steam railroads in this country indicate that practically no orders are now being placed for wooden passenger cars. Between Jan. 1, 1913, and July 1, 1913, 1140 passenger cars were ordered, of which 93.3 per cent were of all-steel construction and 6.7 per cent had steel underframes. The committee said that the cost of replacing wooden passenger, baggage and postal cars by steel cars of the same type in this country has been estimated at \$614,619,900, and the committee believed that any legislation requiring wholesale change would be undesirable. The American wooden car, although inferior to the steel car from the standpoint

of safety, is superior in that respect to the passenger cars used in Europe. The committee did not express an opinion upon the relative merits from the standpoint of safety of all-steel cars and cars with steel underframes, but it believed that this subject should receive study. It also rejected a recommendation that carriers should be required to use steel cars throughout in every train containing any steel cars. It believed that one, two or perhaps three steel cars at the end of the train made up with the other cars of wood would afford a great deal of protection in case of a rear-end collision.

SIGNALS

The committee referred to the increasing use of the overlapping system of signals, but made no direct recommendations in the matter.

REPORT OF THE COMMITTEE ON STATISTICS AND ACCOUNTS OF ELECTRIC RAILWAYS

This report was presented by A. F. Weber, chief statistician New York Public Service Commission, First District. An abstract follows:

Owing to the reorganization of the Massachusetts Railroad Commission and the inability of Mr. Bishop to devote sufficient time to the work of the committee, the chairmanship devolved upon the second member of the committee. With members in Maine, Washington and Georgia, it was found impossible to arrange a meeting of the committee at which there could be a full discussion of the more important questions involved in classification of accounts. Some progress has, however, been made as a result of correspondence, and the committee is prepared to make certain recommendations to this convention.

The situation with regard to the regulation of public utilities is changing so rapidly that it will probably prove impossible to arrive at finality in accounting matters. Up to the beginning of the present year seventeen states in addition to the national government had conferred upon a railroad or public utility commission authority to prescribe the accounts of corporations under their jurisdiction, including the following: Alabama, Arizona, California, District of Columbia, Georgia, Maryland, Massachusetts, Nebraska, New Hampshire, New Jersey, New York, Ohio, Oregon, Texas, Vermont, Washington, Wisconsin. About one-half of these states have adopted classifications of certain groups of accounts for electric railways, although only a few, including New York, Wisconsin and Maryland, have prescribed complete systems of accounts. In the present year the States of Maine, Pennsylvania, Illinois, etc., have enacted comprehensive public service commission laws which confer ample authority to supervise accounting methods. Several of these laws show the influence of the model utility bill prepared by the National Civic Federation's department of public utility regulation. As a member of the committee on accounts and reports, the chairman of your committee assisted in preparing the bill and can bring you the assurance that the sections of the bill relating to the regulation of statistical and accounting procedure embody the best results of experience and should be of assistance to the legislatures of states that have not yet provided for such supervision of electric railway accounts and statistics.

SEGREGATION OF POWER ACCOUNTS

Mention was made in the report of the committee last year of the serious objections to the inclusion of accounts

relating to the maintenance of electric power plants and facilities in the groups "maintenance of way and structures" and "maintenance of equipment," and it is generally conceded that such inclusion impairs the usefulness of the present classification of operating expenses in making comparisons between different properties, some of which include no power plant. Where companies buy electric energy, the price which they pay includes the expense of maintenance as well as operation of the power plant that delivers the energy. Similarly, if a company exercises a franchise for the sale and distribution of electric current as well as the transportation of persons and property, all of the detail accounts which contain the expenses of producing power are found in the commercial lighting department expense classification, and the cost of power used by the railway department is transferred by a single entry.

It may be stated that the only question now involved in doubt regarding the segregation of the power costs is the question as to where the line should be drawn between power costs and railway costs. Some engineers who have been especially interested in comparing the relative economy of electrified branches of steam railroads with steam operation have argued that the cost of power taken over by the railway department should include all power costs up to the point of the delivery of power to the car. This classification, however, would result in separating from the maintenance of way all the expenses of inspecting and repairing wires and cables oftentimes attached to the track structures, third-rails and even rail bonds, all of which constitute a part of the plant and facilities of every electric railway whether it produces or buys its power. It, therefore seems advisable to leave the power distribution expenses in the railway classification and to set apart from that classification only the production and transmission expense accounts, which show the cost of electric current as delivered to the distribution system.

The segregation thus proposed would remove from the group of maintenance of way and structure accounts the account entitled transmission system repairs and would require the division of the following accounts in the same group: superintendence of way and structures; pole and fixture repairs; underground conduit repairs; repairs of buildings and structures; depreciation of way and structures.

In the group "maintenance of equipment" the two accounts "superintendence of equipment" and "depreciation of equipment" would likewise have to be divided, and the seven accounts relating to repairs of furnaces, steam engines and other power-plant equipment, as well as repairs of substation equipment, would be transferred bodily to the new group of power accounts, as would also all of the accounts in the group "operation of power plant" relating to labor and materials. Commissions or companies which have not already subdivided the account superintendence of transportation would, of course, make such subdivision so as to leave in the railway department group "operation of cars" only such superintendence as relates strictly to transportation.

RENTS

Certain classifications of operating expenses include one or more accounts for rents payable by the accounting corporation for the use of cars, tracks, etc., owned by other corporations. But operating expenses are always understood to represent the cost exclusive of any return upon the investment in the plant and facilities used to produce a commodity or service. Where the operator owns the plant he will receive the entire surplus over the operating expenses diminished only by the amounts claimed by public authorities as an enforced contribution to government. If he has borrowed capital his operating costs will not be affected, but his profits will be diminished by the existence of claims of creditors (bondholders, etc.). If he borrows (i. e., hires or leases) his plant or equipment he

must still meet the expense of maintenance and operation and his operating costs will not be affected, but his profits will be diminished by the rent he pays as compensation for the use of the property leased.

No railway company would now think of including in operating expenses the interest upon equipment trust obligations representing the cost of rolling stock advanced by investors through a trustee. And yet, as a matter of principle, such interest differs in no wise from a payment, let us say, of \$2 per car per day which may be charged as hire of equipment to an operating expense account.

Operating expenses should not be affected by changes in ownership; the cost of maintenance and operation will be the same whether the cars are owned by the accounting corporation, by a trustee or by some other railway company. This principle has been fully recognized by the Interstate Commerce Commission in its classification of operating expenses for steam railroads, which requires that rents that cover maintenance as well as a return upon investment should be subdivided and only the former element included in operating expenses. The only rents that are allowed in operating expenses in their entirety are the rents of offices, which cover light, heat, service, etc. The same principle should be followed in the classification of operating expenses on electric railways.

MAINTENANCE (REPAIRS, RENEWALS AND DEPRECIATION)

None of the questions thus far discussed equals in importance the subject of maintenance, viewed as the cost of maintaining the railway investment unimpaired. If maintenance had been properly defined in the past, public utility commissions would not now find themselves so frequently confronted with the problem of giving their approval to the issue of securities for the purpose of acquiring funds to be used essentially for replacements and renewals. In one rate case after another commissions find that the property accounts of public utilities carry the cost of plants in duplicate—an existing plant and a superseded plant which should have been written off the books. Possibly the authorized fares or rates have not always been sufficient to permit utilities to make all necessary replacements out of earnings, but proper accounting methods will at least reveal any such inadequacy if it exists.

Repairs do not of course constitute complete maintenance. In the case of the steam railroad running on its own right-of-way it is true that the regular inspection and repair of roadbed, ties and rails may include all necessary renewals and, therefore, provide complete maintenance. But in the case of street railways the situation is different even in respect to track maintenance, since track is in most cases laid in paved streets which cannot be disturbed from day to day or week to week for the purpose of making piecemeal repairs. Consequently if the street railway company defers the making of repairs and renewals and distributes all surplus earnings above the necessary transportation expenses, it is likely to find itself financially embarrassed when it has to renew rails and ties along an entire street. Cars again can be repaired almost indefinitely, but sooner or later every car for one reason or another will be discarded even if it is still capable of being further patched up. It is no longer denied that the gradual consumption of the capital embodied in the car constitutes a necessary expense which should have been included in the operating expenses deducted from earnings before any distribution is made to stockholder; and the only question now being debated concerns the method of making such reservation for replacements and abandoned property.

The discussion of renewal and depreciation accounts in this country is still in its early stages. The Interstate Commerce Commission in its classification of operating expenses of steam railroads of 1907 prescribed depreciation and renewal accounts for the several classes of rolling stock, and since then several of the state commissions have

required electric railways to set up depreciation accounts in two or more groups. In neither case was there any attempt made to impound moneys set aside from revenue to provide for future renewals, it being intended that such moneys should be expended for new equipment so as to maintain the value of the original equipment in the aggregate, but without reference to individual replacements. Some of the companies, however, have preferred to set aside a definite fund for the larger replacements and turn back into this fund all its accumulations in the way of interest on securities in which it is invested.

There is a growing belief, however, that accuracy in estimating the necessary reservation to be made for deferred renewals must necessarily depend upon the detailed itemization of renewals. This has been recognized by the Interstate Commerce Commission in its accounting series circular No. 35, containing the tentative 1913 revision of operating expenses of steam roads. Each one of the numerous repair accounts is accompanied with its own depreciation account. Under maintenance of road, for example, there are thirty primary accounts besides the depreciation accounts, which number twenty-three. Such detail in accounting will eventually insure more careful and accurate estimates of current depreciation as it accrues.

The committee is not prepared at this time to make any recommendations as to the formulation of rules regulating depreciation accounts and, therefore, submits the subject to the convention for discussion. The only recommendations which it asks the association to adopt are those relating to the segregation of power accounts and rents.

It is proper to say that Mr. Ham has views that may differ from these recommendations.

MEMORANDUM OF THE COMMITTEE ON STATISTICS AND ACCOUNTS

Renewed attention has been given to the analysis of expenses among the several branches of railway service. The Interstate Commerce Commission by formal order required all operating carriers having a revenue of \$1,000,000 or more to state the extent to which and the manner in which they separate their operating expenses between freight service and passenger service.

The result of this inquiry is exceedingly interesting. It appears that the universal requirement from all large carriers that an analysis of this kind be regularly made would not be so much of an innovation as one might be led to think from some of the discussions, since at the present time such an analysis is made regularly for their own purposes by carriers whose aggregate mileage is about one-half of the total mileage operated by the large roads in the United States. In addition, roads operating together about 15,000 miles made a complete separation of their operating expenses in this circular, but apparently do not do so regularly for their own purposes. Furthermore, a large number of additional roads separate their important transportation accounts between freight service and passenger service, although not doing so for items of maintenance of way and structures. Altogether, we have been surprised at the widespread extent of this practice of analyzing expenses between freight service and passenger service.

In justice to the opponents of cost accounting it should be understood that most of the roads which separate their expenses between freight and passenger traffic do so as a measure of efficiency in operating and not for measuring the reasonableness of the rates.

There is great need for standardizing the practice. The most common rule for separating common expenses is that of train miles, but other bases are also used such as locomotive mileage, car mileage, etc. There is also need for standardizing the practice with respect to those items which are regarded as directly assignable, for it is apparent that

some roads make these assignments with much greater thoroughness than other roads.

Generally speaking, it may be said that when the accounting has been suitably planned at least two-thirds, and perhaps more, of the operating expenses can be separated either directly or on reasonably convincing bases of apportionment. The percentage obviously depends in part on the nature of the traffic. An all-freight road can apportion 100 per cent of its expenses to freight. The Erie entered 73.3 per cent of its operating expenses in columns calling for expenses caused by either service alone. For the Pennsylvania Lines West the corresponding figure was 72.2 per cent.

Theoretical opinion is showing some tendency to be more favorable to the cost-of-service principle, and the argument for a system of cost accounting is strengthened by a consideration of the nature of the questions with which regulating bodies have to deal. Up to the present time the courts have not shown any inclination to discontinue considering cost as an important factor in the ultimate determination of a rate. We believe that if cost of service is to continue to be the determining factor in measuring the reasonableness of rates it is time that the division of expenses among the several branches of the service should be threshed out to a finality.

A system of accounting designed to permit of the analysis of expenses between freight, passenger and other services should provide for a division of expenses between terminal and road operations. A number of state commissions, in correspondence with your committee, have expressed especial interest in the separation of revenues and expenses along state lines, and in view of recent court decisions we think little argument is needed on this point, but before anything satisfactory can be achieved along this line we believe it is necessary to have a separation of expenses between terminal and road operations.

REPORT OF COMMITTEE ON LEGISLATION

Within the past decade many states, including most of the states of the Northwest, have enacted statutes empowering their commissions to pass upon all questions affecting the stock and bonds issued by railroads and other public utilities. To-day a railroad traversing a half dozen states must submit its application for securities at as many different state capitols under varying conditions of both law and procedure. A federal statute making use of the state agency already provided would remove this duplication and the burden incident to it and tend to bring about uniformity in regard to those securities that must remain exclusively under state control.

REPORT OF COMMITTEE ON SAFETY APPLIANCES

The most important matter along the line of safety appliances at the present time is the installation of block signals on the railways of this country and the application of a rigid discipline against the violation of signal indications.

Another phase of block signal installation is the desirability of some form of automatic train control. Every one will admit that the interlocking systems at grade railroad crossings are an absolute necessity in modern railway operation, and yet how can we reconcile our ideas of "safety first" with a device that under certain circumstances provides for deliberately opening the main track and throwing a train into the ditch with a possible loss of life and an inevitable damage to rolling stock and roadbed of many hundreds of dollars, when there are devices which under like circumstances would immediately operate the train brake and bring the train to a stand before reaching the

danger point? That there are devices of this kind in successful operation is beyond question.

One of the things that have engaged the attention of the Illinois commission has been an endeavor to reach a standard for overhead and side obstructions. A great many accidents are caused by overhead bridges and umbrella sheds at industrial plants, and the Illinois commission has a rule of not less than 22-ft. clearance for all overhead obstructions measured from the top of the rail to the lowest point overhead.

The greatest difficulty is from the side obstructions, coal sheds, loading platforms, water cranes, mail cranes and switch stands, etc., and it is absolutely necessary, before fixing a standard rule to cover lateral clearances, that there be a maximum width established for all equipment. At the present time there are all sorts and sizes of cars, and no maximum has yet been fixed as to the width either at roof or floor, so that any rule adopted to-day may be of no value to-morrow, and the railroads themselves are far apart as to car dimensions. In order to adopt a uniform code of rules for clearances, it would seem advisable to adopt some method to establish a maximum width for all equipment used by railroads.

It has been suggested that a uniform system of accident reports to be used by the Interstate Commerce Commission and all of the states would be a further step in the right direction.

The most crying need at the present time is the control of trains, not by a time limit as is the practice of a number of roads, but by an absolute space limit carefully defined by block signals and rigidly enforced and, if necessary, further protected by an automatic train stop.

PROGRESS ON NEW 2400-VOLT KALAMAZOO-GRAND RAPIDS (MICH.) LINE

The new 2400-volt electric interurban line between Kalamazoo and Grand Rapids, Mich., is rapidly nearing completion. This new 92-mile line when completed will form a part of the Michigan United Traction Company's lines. The grading was completed about Oct. 1, and the track will be laid between the city limits of Kalamazoo and the city limits of Grand Rapids by Nov. 15, 1913. At the present time the ballasting is well under way, approximately one-third being completed. By means of an equipment of four steam locomotives the work of ballasting is being carried on as rapidly as possible. There was some delay to construction on the Grand Rapids end of this line owing to terminal negotiations. These are practically settled at this time, however, and construction work is again moving ahead. Work on the bridges over the Grand River at Grand Rapids will be commenced early in the spring, and when this is completed the rest of the line will be ready for operation. The electrical equipment for this line will include eight 500-kw, 1200/2400-volt rotary converters, four 500-kw, 1200/2400-volt motor-generator sets and twenty quadruple equipments of GE-239 1200-volt motors with multiple-unit control.

MONOGRAPH ON BERLIN RAPID TRANSIT SYSTEM

The Siemens & Halske and Siemens-Schuckert companies have recently issued an album describing the elevated and subway rapid transit system of Berlin and their important share in it as contractors. The monograph presents a map of the lines now in service and of others under construction. It gives a history of the inauguration of each project, describing briefly the constructional and equipment features of each route, the methods of operation, the amount of traffic handled and the nature of the franchise agreements. More than a hundred illustrations show fully the constructional and operating features of the several lines and of the buildings used in connection with them.

CAR-LIGHTING TESTS IN TOLEDO

During the past summer the lighting of the cars of the Toledo Railway & Light Company was made a subject of elaborate study, the results of which have now been utilized in the remodeling of the lighting equipment. The improve-

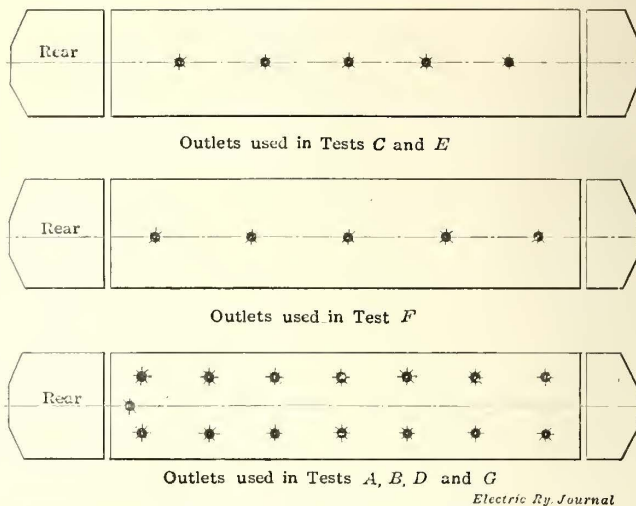


Fig. 1—Toledo Lighting Tests—Different Arrangements of Lamps Used in Tests

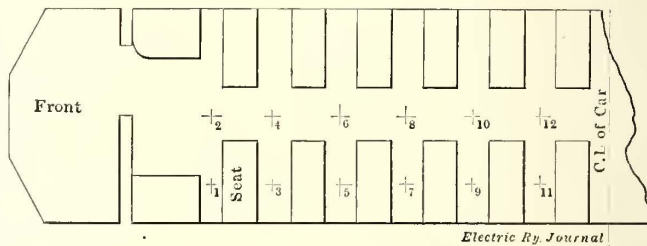


Fig. 2—Toledo Lighting Tests—Location of Test Stations

ment is so noticeable that visitors have congratulated the citizens upon having most excellently lighted cars. The changes consist in the substitution of tungsten for carbon-filament lamps, the placing of the lighting units in order to give the best effect and the selection of reflectors which are best suited to the purpose.



Toledo Lighting Tests—Interior View, Test A, 36-Watt Lamps with Reflectors

Before the changes were made a systematic illumination test was made by illuminating engineers from the Bryan-Marsh Works of the General Electric Company in cooperation with C. A. Brown, master mechanic of the railway company. Three cars were equipped with outlets as shown in Fig. 1, the cars being alike in size and furnishing. The inside dimensions of the cars were 34 ft. 6 in. by 7 ft.

8 in. The tests were made at the Central Avenue carhouse in the evening, and the car shades were drawn while the measurements were made. The lighting equipment for the several tests was as follows:

Test A.—Fifteen 36-watt tungsten lamps, with small Holophane Realite fixtures.



Toledo Lighting Tests—Interior View—Test B, 36-Watt Lamps with Reflectors

Test B.—Fifteen 36-watt tungsten lamps, with Holophane Sudan 6-in. reflectors.

TABLE SHOWING INTENSITY OF ILLUMINATION IN FOOT-CANDLES FOUND AT DIFFERENT LOCATIONS IN CAR DURING SEVEN TESTS

Station Numbers	Test Designations						
	A	B	C	D	E	F	G
1	3.8	3.9	2.1	1.3	3.1	2.4	1.2
2	4.2	4.9	2.7	1.5	3.1	3.3	1.0
3	3.5	4.1	4.1	1.4	4.2	2.7	1.4
4	3.7	4.9	3.9	1.2	4.1	3.4	1.2
5	4.1	3.8	3.9	1.8	4.4	3.4	1.3
6	3.5	4.7	3.8	1.7	4.5	3.6	1.2
7	3.3	3.6	3.8	1.6	4.8	3.6	1.5
8	3.4	4.0	4.2	1.7	4.0	4.7	1.6
9	3.2	4.1	3.7	1.7	4.2	3.8	1.4
10	3.5	4.4	4.7	2.0	4.7	3.4	1.5
11	3.5	4.1	4.2	...	4.5	3.3	1.6
12	3.8	4.2	4.9	...	4.7	3.8	1.4
X-1*	3.6	3.9	2.1	1.4	3.5	2.3	0.86
X-2*	3.3	3.8	...	1.4
Average	3.6	4.17	3.7	1.5	4.2	3.3	1.3

*Extra tests made at stations 1 and 2.

Test C.—Five 94-watt tungsten lamps, with Holophane pearl-finish Sudan reflectors.

Test D.—Fifteen 54-watt clear-carbon lamps without reflectors.



Toledo Lighting Tests—Interior View—Test D, 54-Watt Carbon Lamps Without Reflectors

Test E.—Five 94-watt tungsten lamps, with large Holophane Realite fixtures.

Test F.—Five 94-watt tungsten lamps with 12-in. Veluria semi-indirect fixtures.

Test G.—Fifteen 23-watt tungsten lamps without reflectors.

Measurements of light intensity were made by means of

a Sharp-Millar portable photometer with a battery-supplied standard lamp in which the current was maintained constant with the aid of a voltmeter and regulating rheostat. The illuminometer was mounted on a tripod 34 in. above the floor. No attempt was made to correct for voltage fluctuations in the other lamps. The test stations were



Toledo Lighting Tests—Interior View—Test E, 94-Watt Lamps with Reflectors

selected as shown in Fig. 2 to yield a true average value of the illumination where it was needed by the passengers. The number of stations was sufficiently large to eliminate errors of observation.

The results of the tests are given in the accompanying table.

As a result of the tests the illuminating engineers recommended the outfit used in test B with lamp-holding fixtures made by the Safety Heating & Lighting Company. The railway company has equipped a score of cars with each of three different kinds of lighting units with a view to giving the public a chance to assist in the final decision as to which is best. The three types are an indirect fixture, a semi-indirect transmitting part of the light through the glass bowl and a semi-indirect in which there is an aperture in the bottom of the reflecting bowl allowing a part of the light to be transmitted at full intensity. The rest of the cars of the system have been fitted with ten 40-watt tungsten lamps each.

The company expects to secure through the improved lighting scheme not only more light with less power expenditure but also an excellent return on the investment



Toledo Lighting Tests—Interior View—Test F, Semi-Indirect Lighting

through the advertising value of the well-lighted cars. So far the results have justified the expectation.

An application has been submitted by P. A. Popov and A. N. Rukin for permission to form a company for constructing an electric railway, 35 miles long, from Moscow to Voznyesyensk. The cost is estimated at \$3,500,000.

Violence in Indianapolis Strike

Service of the Indianapolis City Lines Interrupted and Disorder Prevents Resumption of Operation—Statement by President Robert I. Todd on the Causes of the Outbreak

After several months of continued effort on the part of the organizers of the Amalgamated Association, who have been striving, so far unsuccessfully, to form an organization of the city trainmen of the Indianapolis Traction & Terminal Company at Indianapolis, Ind., matters were brought to a crisis when J. J. Thorpe, vice-president of the

ing districts. Full operation of all interurban schedules is in effect on every line as far as the city limits of Indianapolis.

On Sunday morning, Nov. 2, another attempt was made to operate a few cars with police protection, but after several trips the police were withdrawn by the superintendent of police and the mobs were allowed to raid the cars.

The demands which had been presented by Mr. Thorpe just before the mass meeting called for the night of Oct. 31, which precipitated the riotous condition in the city, called for a flat rate of 32 cents per hour for the city men and 35 cents for the interurban men; 75 per cent of the runs on city schedules to be known as "earlies" and "lates" and to be completed within eleven consecutive hours, "swing" runs to be completed within fourteen consecutive hours; all runs of less than nine hours to pay nine hours' time; time and one-half for all time worked over the daily schedule; for the interurban men, all men discharged since the union movement was started to be reinstated; all freight trains to consist of at least one motorman, one conductor and one brakeman; all trains of more than one car to have at least one motorman, one conductor and one brakeman; the right to have grievances presented by a committee of the organization, and an arbitration clause to arbitrate all matters that cannot be satisfactorily adjusted.

STATEMENT OF ROBERT I. TODD

Robert I. Todd, president Indianapolis Traction & Terminal Company, made the following statement regarding the condition of affairs and demands presented:

"The street railway company wishes the public to understand that its employees are not on strike. The motormen and conductors are willing and anxious to run their cars and have not joined the association of their own free will. They have been dragged from their cars and marched under threats of death to the hall, where they have been forced to join the union, knowing if they did not they would be roughly treated. The company's officers wish the public, which is the real sufferer in these disturbances, to



Indianapolis Strike—Mob Blocking Car, Nov. 1, and Compelling Abandonment by Motorman

Amalgamated Association, and other outside organizers, taking advantage of the carnival conditions prevailing in the downtown sections of Indianapolis during Halloween night, Oct. 31, called a mass meeting of the labor unions, together with the small number of men who had been prevailed upon to join the local union which they were attempting to form.

About 11 p. m. riotous mobs gathered in the streets and began assaulting motormen and conductors and dragging them from the cars, taking them forcibly to the Labor Hall and compelling them to sign as members of the union. Several who resisted were brutally beaten. No effort was made on the part of the police to disperse the mobs or to protect the car crews. This condition of riot prevailed during the night.

On Saturday morning, Nov. 1, the majority of the car crews reported for duty at the carhouses, and the company decided to operate about one-half of the regular schedules, being assured of protection for the men. Thousands of rioters filled the downtown streets, blocked the cars, cut trolley ropes, dragged off the crews and again marched them to the Labor Hall to sign the roll. Many of the employees signed for the second or third time in order to avoid further mistreatment at the hands of the mob.

By noon on Saturday the operation of every car had been stopped by force, and the mobs were attempting to destroy the cars and were cutting wires and committing other depredations. The company informed the police department that it had sufficient men ready to operate full schedules, if necessary, provided the crews and property would be protected. No effort was made, however, by the police department to permit the operation of cars or to prevent the destruction of property. Interurban cars entering the city were then made the object of attack, and it was necessary to stop all interurban lines at the outly-



Indianapolis Strike—Car Burned by Mob

know that the trouble is all caused by men from Detroit, Pittsburgh, Chicago and other places, who have no interest in the affairs of the city of Indianapolis, who are not taxpayers or even residents of the State of Indiana, but who are here to unionize the employees of the street railway company by brute force. If the men can get the protection

of the police, the cars will be operated on every line in the city.

"The so-called demands submitted to the company by J. J. Thorpe, of Pittsburgh, vice-president of the Amalgamated Association, are founded entirely on misrepresentation and exaggeration, without any consideration for truth

cluding time allowed regular crews for meal relief (which is paid for in Indianapolis but not in Cincinnati) the wage scale practically amounts to from 20 cents per hour the first year to 26 cents per hour after the fifth year. The population of Cincinnati in 1910 was 364,463; that of Indianapolis was 233,650. The rate of fare in Cincinnati is 5 cents,

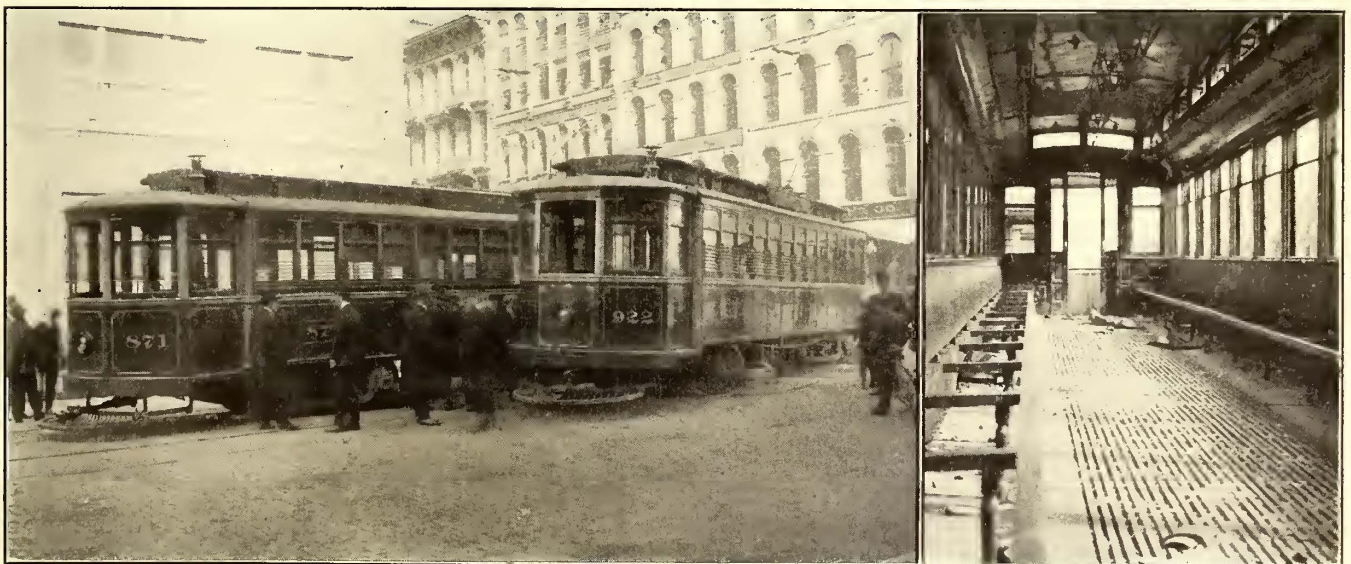


Indianapolis Strike—City Cars Stored in Traction Terminal Train Shed for Protection

or fair dealing. In reference to the demand for an increase in the rates of pay of motormen and conductors to a flat rate of 32 cents per hour, it should be known that after a state of riot and bloodshed had been brought about in Cincinnati during May of this year by the same organization which has now produced a similar condition of affairs in Indianapolis arbitration was finally agreed upon, with the result that the following wage scale was adopted for motormen and conductors: commencing at 20 cents per hour and running to 27 cents per hour for and after the tenth year, this scale to be effective to June 30, 1914. Immediately upon the award being made, W. D. Mahon, international president of the Amalgamated Association,

without any reduction for tickets. In Indianapolis six tickets are sold for 25 cents and twenty-five tickets for \$1. The ticket fares are more than four-fifths of all fares. The ticket fares, on the basis of passengers carried for the year 1912, amounted to a reduction of \$512,947 from a uniform 5-cent fare. Notwithstanding the fact of this low rate of fare, the wage scale of the company is among the highest in the country in cities of anything near the same population.

"As evidence of the fairness of the traction company to its employees, it is well known that their rate of wages has been increased from year to year beyond the amount which the receipts of the company justified; or, in other



Indianapolis Strike—Cars Derailed by Mobs at Meridian and Maryland Streets—Interior of Car Standing on Street, Showing Damage Done

publicly said: 'The finding of the arbitration board is one of the best I have ever known.'

"Compared with this, the wage scale of the motormen and conductors of the Indianapolis Traction & Terminal Company at the present time runs from 20 cents per hour the first year to 25 cents per hour after the fifth, and in-

words, the employees have benefited more from the earnings of the company than have the stockholders or any other part of the corporation. In the year 1905 the rate of wages of the motormen and conductors began at 16 cents per hour as a minimum and went to 18 cents per hour as a maximum. The present rate of wages, as stated above,

is 20 cents per hour as a minimum and 25 cents per hour as a maximum. In only one year, and that following the panic of 1907, has an increase not been made in the pay of the motormen and conductors of the company, and the present rate, as compared with 1905, shows an increase in the maximum wages paid of 40 per cent in the period of

Special Notice to Organized Labor

A Special Mass Meeting of all Organized Labor of Indianapolis and vicinity will be held Friday evening, October 31st, Labor Temple Hall, 138 West Washington St., in conjunction with Central Labor Union. It is of vital importance that all Organized Labor attend this meeting, as your future welfare is at stake. It is up to you to make this one of the greatest meetings that Indianapolis ever had. Don't fail to attend this meeting. Organized motormen and conductors are invited to attend.

By request of the Amalgamated Association of Street and Electric Railway Employees of America.

J. J. THORPE, First International Vice-President.

P. J. SHEA, General Executive Board Member.

Indianapolis Strike—Notice Issued by Organizers Calling Mass Meeting Oct. 31, Which Precipitated the Rioting

seven years, while the fare charged for transportation on the cars has not been increased.

"We believe that this showing of increased wages paid cannot be exceeded, if equaled, by any manufacturing industry or corporation in the city of Indianapolis. The demands of Mr. Thorpe were made purely for the purposes of attempting to stir up unrest and dissatisfaction among the loyal employees of the company, and not with any idea that such demands could in any way be fairly made of the company. The older residents of Indianapolis will remember the strike which occurred about 1892 against the Citizens' Street Railroad Company and the conditions in the street railway service which were brought about by the same organization which has caused the present riotous conditions, and which continued until 1899 when the Indianapolis Street Railway took hold of the property of the Citizens' Street Railroad Company; and all the people of the city will remember that from that time until the present day, a period of fourteen years, the city has had no strike by the employees of the company.

"In other cities of the State, as well as in cities of adjoining states, such strikes have been of frequent occurrence. The company believes that the citizens of Indianapolis are entitled to and should receive reliable and dependable service at all times, which cannot be given if the orders of outside foreign agitators are to be superior to those of the officers of the company who are most deeply interested in supplying good service to the public, in which outside agitators have no interest whatever. The employees of this company have always been contented with their wages and other conditions of their employment."

ATTEMPT TO GET CARS TO CARHOUSE

On Monday morning, Nov. 3, an attempt was made by the company to move to the carhouse some of the cars which were blocking the downtown streets. The police searched the carmen in the presence of a large mob, and then stepped aside, giving them no protection whatever. Later, President Todd and Superintendent Mahoney took personal charge of an attempt to move these cars, with the protection of Superintendent of Police Hyland and a squad of men. They were stoned and assaulted by a mob which had increased to between 8000 and 10,000 people. A squad of mounted police escorted them to the Traction Terminal Building, but on the way up Capitol Avenue they were struck and slightly injured by the volleys of missiles. The mob rushing the police at intervals. No effort was made on the part of the police to disperse the crowd which surrounded the Terminal Building for some time after the officials were safely inside, and only a few arrests were made. Politics seemed to be playing into the hands of the organizers, as the city election was to be held on Tuesday, Nov. 4—the city administration being Republican, the sheriff of the county Democratic and the Governor Democratic.

Late in the afternoon of Tuesday, Nov. 4, a suit for a receiver for the Indianapolis Traction & Terminal Company was filed in the Marion Circuit Court. The suit asks that the franchise of the Indianapolis Traction & Terminal Company be forfeited on account of its failure to operate cars in the city since the strike was begun. Judge Remster informed the attorneys filing the suit that he would hear an application for receiver on Nov. 6. The parties behind the suit are identified with the labor interests of the city.

Frequent attacks were made on the Louisiana Street carhouse, which adjoins the Union Station, and on several occasions this building was fired upon by the mobs. One of the 250 car service men who have been quartered in this building for protection, awaiting an opportunity to operate cars, was shot and killed by bullets fired during one of these fusillades. On several occasions police officers turned in their badges, refusing to protect the company's property.

On Tuesday morning, Nov. 4, another attempt was made to move cars from the streets at Georgia and Capitol Avenues to the Louisiana carhouse, one block away. When the crowd gathered thirty policemen removed their badges and refused to protect the men working on the damaged cars. Between 550 and 600 ironworkers who were working on new buildings being erected in the city went out on a sympathetic strike, adding to the turbulent spirit of the crowds on the streets. Sheriff Porteus, after consultation with Superintendent of Police Hyland, deputized 200 prominent citizens for special police duty. Later that morning

The Final and Last Appeal

To the Motormen, Conductors, Barn, Shop and Power House Men of Indianapolis, Terre Haute, Anderson, Muncie, Marion, Logansport, Peru, Tipton, Bluffton, Kokomo, Fort Wayne, Lafayette, Richmond, Elwood, Lebanon, Columbus, Greenfield, Shelbyville, Rushville and all other points:

We take this means of informing you that your committee has exhausted all honorable means to avert a strike in the various cities named.

The several companies have obstinately refused to recognize you as free American citizens, thereby depriving you increased wages, shorter hours, and better working conditions, which have been granted in all cities in the United States and Canada where organizations exist.

The wages now being paid in Indianapolis are the lowest of any city in the United States. Therefore we, your committee, appeal to you in behalf of the Amalgamated Association, and organized labor, and American citizenship to take your cars in the barn at 11 o'clock to-night, Friday, October 31st, 1913.

And immediately come to the Building Trades Labor Temple, 138 West Washington street, and register your name with those now on the list—if you have not already done so. We have a substantial organization of city and interurban men, and do not believe any statements to the contrary.

Don't pay any attention to any threats the street railway officials may make to you. Come and join with the great army of organized workers, and help win the battle which you are forced to fight for recognition.

You are pledged the moral and financial support of the entire labor movement of the United States and Canada.

Remember the hour and prove yourself true to yourself, family and fellow-man.
Fraternally yours,

R. A. McDANIEL,
CLAUDE KINDEE,
Committee of Division 645.

Amalgamated Association of Street and Electric Railway Employees of America.

P. J. SHEA,
Board Member.

J. J. THORPE,
First International Vice-President.

Indianapolis Strike—Appeal to Employees of City and Interurban Lines to Join the Union and Strike, Oct. 31

Mayor Shank, after a conference with Corporation Counsel Joseph B. Kealing, issued the following statement:

STATEMENT BY MAYOR SHANK

"I do not want the impression to go out that I do not want the police to do their duty in all respects. In the last day or two, after conference with the officers of the police department, I believed the lives of all policemen who assist in running cars were in danger, and I did not want any bloodshed. Whenever the police are sufficiently rein-

forced, and I believe that can only be done by the state militia, I will see that every policeman does his full duty, both in the protection of lives and property and the running of street cars for the public. Any officer who will not do this will be summarily dismissed. The street cars are for the use of the general public and must not be stopped in running either by the officials of the company, their employees or outsiders. I am ready to do my full part in carrying this out when I get the assistance that we ought to have."

No serious attempt was made by the mob to reach the main power station of the company at West Tenth Street, probably owing to the fact that at this point the guard of police under command of a sergeant had strict orders to use their guns at the first attempt to get within the lines.

There seems to be no dissatisfaction in any way among the motormen of the interurban lines, who were included in the call to "strike" issued by J. J. Thorpe, and all cars continue to run on regular schedule as far as concerns the outlying districts of Indianapolis.

During Tuesday, owing to the election, the crowds were scattered and no serious disturbances arose. A mass meeting of the labor sympathizers was held in front of the Court House in the afternoon, and addresses were made by clergymen urging them to refrain from further violence. A request for leave to use the lawn in front of the State House for the mass meeting had been denied by Governor Ralston. At 6 o'clock Tuesday evening ten men representing the labor organizers called on Mayor Shank and asked him to use his influence with Robert I. Todd, president of the Traction & Terminal Company, and intercede for arbitration. The Mayor informed them that he did not think he could do anything for them in the matter.

Ethelbert Stewart, chief statistician of the Department of Commerce, who was sent to Indianapolis about a week ago at the request of the labor leaders, conferred with Governor Ralston regarding the calling of the state militia, but the Governor reiterated that the police authorities of the city were able to handle the situation if the proper effort was made. Mr. Stewart then requested the department at Washington to send another man to assist him in trying to effect a conciliation that will lead to an adjustment of the conditions at Indianapolis.

On Wednesday morning, Nov. 5, another attempt was made to operate a car on the Illinois Street line. Manned by seven car service men and escorted by twenty patrolmen and a squad of mounted police, the car proceeded only two or three blocks when the crowd began to gather, and missiles were thrown, breaking windows. The crowd grew rapidly as the car proceeded, until it was surrounded by a riotous mob of 8000 men. The crisis of the riot came at Illinois and North Streets, when the police were rushed, the trolley rope was cut and the carmen were beaten down to the floor of the car by a hail of stones and bricks.

A mob of 1500 men then marched to the West Tenth Street power station, but were met by a force of police opposite the power station and compelled to return.

On the morning of Nov. 6 Governor Ralston issued orders for the assembling of the Indiana National Guard, which had been awaiting the call for two days. The militia, 2000 in number, arrived rapidly during the day on special trains and was assembled at the various armories, without many people being aware of its presence in the city. A mass meeting was called by the labor men at noon on the south lawn of the State House to protest against the mobilization of the militia. Governor Ralston made a short speech, in which he said:

"On Jan. 13, 1913, I took a solemn oath to see that the laws of my State would be executed. I am confronted by serious conditions. I have seen lives sacrificed in our streets and it is not for me to debate who was at fault. I know that life was not secure and that we must make life secure everywhere in our State. Whatever step may

be taken in the future, I hope you will uphold me in the enforcement of the law."

Application for a receiver for the Indianapolis Traction & Terminal Company, which was filed on Nov. 3, was heard on the afternoon of Nov. 6. The attorneys of the company opposed the appointment of a receiver on the ground that the statute regulating such a proceeding as this required that the court hold a hearing first and that no receiver be named unless judgment was rendered against the company.

A new plan for the restoration of peace and resumption of service was submitted on Nov. 6 by President Todd of the company, through Governor Ralston and the members of the Public Service Commission, as follows:

First, Messrs. Thorpe, Wyatt, Fitzgerald, Orr, Colgan, Mahon and all other outside labor organizers shall leave Indiana and not hereafter interfere in any way in the matters covered by this communication, and all charters of the Amalgamated Association of Street & Electric Railway Employees of America for locals of street or street and interurban men shall be immediately withdrawn and annulled.

Second, all employees of the company who have not actually engaged in acts of violence to be reinstated in the positions they held on Oct. 31 under the terms which prevailed then and operation of cars to be resumed at once.

Third, after the full operation of the system for thirty days the company to consider any grievance which any employee may present and endeavor to adjust the same with him. If no mutual adjustment is made the matter thus in controversy shall be submitted to and determined by the five men who constitute the Public Service Commission of Indiana, their decision to be final.

The proposal was on Nov. 6 conveyed to the labor leaders, who went into closed session until after 11 p. m. The labor men would make no statement as to their reply, but said that arrangements had been made for another conference with the Governor at 9 a. m. on Friday morning.

It was anticipated that cars would be operated on Nov. 7 under military protection if the labor men should decline to accept the proposal of the company.

The half-tone illustration on page 1018 showing the interference on Nov. 1 with men in the employ of the company performing their regular duties was reproduced from a photograph which was made available through the courtesy of the representative of the Cincinnati *Enquirer* at Indianapolis.

METHOD OF RECORDING WEAR OF GEARS AND PINIONS

BY W. E. JOHNSON, ENGINEER OF CAR CONSTRUCTION NEW YORK MUNICIPAL RAILWAY CORPORATION

The recent introduction of various types of gearing for electric railway service, including different grades of treated and alloy steels, means that accurate records will be kept of wear and mileage, and a careful study should be made of them so that the quality and combination best suited to fulfil the requirements of the service may be determined. This is especially important because the cost of these special grades is considerably more than that of the ordinary untreated carbon steel pinions and cast-steel gears which have been used in the past.

The requirements of a system for keeping records of wear and mileage of gears and pinions are, first, that it shall be simple enough to enable the ordinary shop mechanic to obtain and report conditions as to wear readily and accurately, and second, that it shall provide for a convenient and comprehensive record of wear and mileage. To fulfil these requirements the writer devised the system herein described, and it is being successfully used by the Brooklyn Rapid Transit System in connection with extensive trials of various makes and grades of gearing now under way.

At the time of its installation one tooth of the gear or

pinion is marked on the end with a prick-punch for identification so that the same tooth can be selected for measurement each time thereafter. Then an impression is taken on a standard 4-in. x 6-in. filing card, specially printed for this purpose, as shown in Fig. 1, by placing the card against the end of the gear or pinion teeth and lightly hammering

other methods in that any variations in the rate of wear are discovered at once, and the results from various combinations are readily noted.

The measurement of the gear and pinion teeth is the most important part in records of this kind, for unless this is accurately done the results will be unreliable and without

Fig. 1—Filing Card Showing Impression of Gear and Pinion Teeth

Fig. 2—Graphic Record of Wear and Mileage of Gears and Pinions

on the back of the card over the outline of the tooth with a machinist's ball-pen hammer. The thickness of the tooth on the pitch circle is then measured and recorded on the same card. This measurement is taken at three points on the tooth, namely, at the outside end, center and inside end. After the car number and other data relative to the gearing have been entered on this card, it is sent to the office of the superintendent of equipment, where the mileage of the gear from the date of its installation is entered and the wear and mileage are recorded graphically on the form reproduced in Fig. 2. This form, which bears complete information as to car number, motors, type of gearing, tractive effort, etc., is kept in a special post binder properly indexed for reference, and as it is printed on a light grade of bond paper it can be blueprinted when occasion requires. The teeth of both gear and pinion of each set of gearing are recorded on the same card and form so that the effect of one upon the other can readily be noted. Records are filed by car number, and impressions and measurements of the gearing are taken each time the car is brought into the shop for overhauling. Thus a progressive record of the wear and mileage is obtained and is always available for reference. From the measurements so taken an average is obtained, and the rate of wear and cost per car mile are computed.

value in determining the best and most economical type of gearing. The standard commercial instruments for measuring gear teeth are expensive and require great care and accuracy in reading the results. For example, a vernier or micrometer scale is required in order to read to a thousandth part of an inch, and furthermore such scales measure only the thickness of the tooth, so that to obtain the wear it is necessary to deduct this amount from the original tooth thickness. The instrument devised by the writer is inexpensive and requires no knowledge of vernier or micrometer reading. As shown in Fig. 3, an ordinary sliding caliper which is provided with a stop plate to give the required distance from the top of the tooth to the pitch circle, is used to obtain the thickness of the tooth. The wear is then obtained directly by inserting a tapered gage between the jaws of the caliper. This gage, which is shown in Fig. 4, is based on the same principle as a tapered screw or wire gage. The zero point represents the new theoretical thickness of the tooth, and the gage is tapered 0.04 in. per inch of length. Full 1/4-in. graduations, with intermediate partial graduations, are provided on one face of the gage, and as each full graduation represents a difference in thickness of 0.01 in., readings to 0.001 in. can readily be obtained with this gage.

Some may consider it superfluous to obtain impressions

The height of the jaws on the calipers will vary according to the pitch and also according to the number of teeth

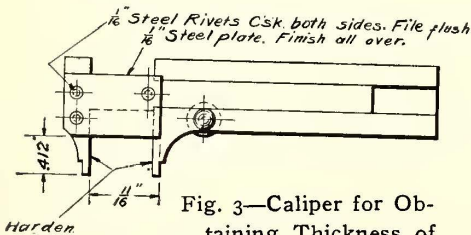


Fig. 3—Caliper for Obtaining Thickness of Gear Tooth

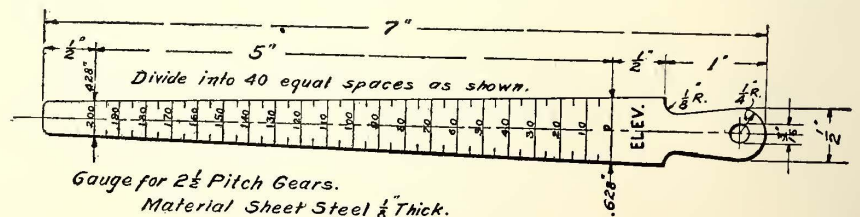


Fig. 4—Gage for Measuring Wear of Gear and Pinion Teeth

of the gear teeth in addition to the measurement of wear because it is of no particular value as a record. However, these impressions have been found very convenient as a reference. Moreover, they provide a quicker means for indicating the condition and give a clearer idea of the wear than could be obtained from the measurements alone. Graphic records of wear and mileage have advantages over

in gear and pinion of the same pitch. Where a comparison in wear between pinions of the same pitch but with different numbers of teeth is required it may be desirable to have a set of calipers for each type of pinion. As the difference in reading in such cases would be very slight, however, and as they would at any rate be comparative, one caliper usually is satisfactory for each pitch used.

THE STATEN ISLAND BOILER EXPLOSION

An account was published in the *ELECTRIC RAILWAY JOURNAL* for Oct. 25 of a boiler explosion which wrecked the power station of the Richmond Light & Railroad Company of Staten Island, N. Y. Six men were killed outright, a seventh victim dying later in the hospital. Electric lighting in the borough of Richmond together with all industrial power supplied from the station was interrupted for a period of five days, but the electric railway service was maintained, although at only about half the usual schedule, the power for the railway service being carried by an older d. c. station at Grasmere.

While the work on the rehabilitation of the station was under way as described later, the company made every effort to secure power from near-by power stations. An attempt was made to make connections from one of the nearest power stations of the Public Service Corporation across the Kill von Kull to the Richmond company's switchboard, but the town of Bayonne had in force an ordinance preventing the passage of high-tension lines, either overhead or underground, through the streets, and this in consequence blocked off any possibility of obtaining power from this source. With the help of the Public Service Commission, First District, New York, an application was also made to the federal authorities to permit the installation of a submarine cable across the Narrows to connect with the Brooklyn Edison power system. This was secured within two days, but by this time the work on the temporary rehabilitation of the power plant was so far along as to make the installation of such a cable unnecessary. The Richmond company is now negotiating for a stand-by line from one of these two companies in case of necessity.

The boiler room contained three vertical water-tube boilers of the Wickes type, of which the exploding boiler was one, and five batteries of horizontal water-tube boilers, built by the Aultman-Taylor Company. All boilers were set in a single row, with the Wickes boilers nearest the stack, a 6-ft. space being provided between the back ends of the boilers and a brick wall which separated the engine and boiler rooms. The boilers were connected to the single stack by a smoke flue under the boiler-room floor, and in consequence the work of removing the enormous pile of débris, consisting of brick, piping and twisted steel beams, which was thrown back of the boilers by the explosion was hampered by the cramped working space between the other boilers and the wall. In addition, the weakened condition of the remaining vertical boilers which were mounted on columns framed in to the boiler-room floor necessitated a great deal of shoring before even the most careful work of repairs could be begun.

The work of cleaning up the débris took two days, and three days more were required to install a new section of smoke flue, 6 ft. by 20 ft. in cross-section and about 90 ft. long, which was necessitated before any steam could be generated because the exploded boiler was between the undamaged boilers and the stack. By the time this had been completed temporary piping was installed and the plant was placed in operation under about 70 per cent of the a. c. load, d. c. power for the railway being maintained through the Grasmere plant.

The boiler which exploded had been cut in on the line to help out during the evening rush about fifteen minutes before the explosion occurred, the man who cut it in having gone to a different part of the plant afterward and thus escaping the accident absolutely. The chief engineer of the plant had gone through the boiler room about five minutes before the explosion and noted that ample water was in all boilers, and a turbine was started between the time that the boiler was cut in and the explosion. These facts support meager information available which tends to show that the boiler exploded absolutely without warning, although all the men who were in position to give any detailed de-

scription of the accident were killed. The boiler, practically complete, was blown through the roof, traveling high in the air for a considerable distance—like an aeroplane, according to one eye-witness—and landed in the Kill von Kull, a salt-water inlet on which the power station fronts. It lay submerged for several days, the only parts left in the boiler room being a circular piece comprising most of the lower drumhead and the mud drum.

During the last week, however, the boiler was raised by a wrecking crew and left on a nearby dock for inspection. The cause of the explosion was at once apparent, and although all tubes were loose not the slightest indication of low water was in evidence, some of the copper fillers remaining between the tubes and the sheet. Around the edges of the fractured bottom sheet of the lower drum were numerous cracks averaging $\frac{1}{4}$ in. in depth and cutting into the $\frac{3}{4}$ -in. plate forming the drumhead which had been reduced, obviously by pitting, to a thickness of $\frac{5}{8}$ in. The lower drum was intact except for the fact that the bottom head had been blown out completely, the line of fracture extending around the head at the bend where it was flanged in to fit the barrel of the drum. Of the four crow-foot braces holding the lower tube sheet in place only one had broken loose from the rivets. This was badly cracked at the insides of the angles where the iron was bent outward to form the crow-feet. Of the others which had the feet broken off, the fractures over most of their areas showed smooth and white with scale, the smaller part in each case showing the rusty red face of a new break. The two crow-feet at the top of the drum on the flue sheet were intact but had cracks at the inside of each bend, one crack being wide open, although the crow-foot had not been distorted. All around the fracture of the bottom head could be traced a distinct line of demarcation between the even, file-like surface of newly fractured steel and the irregular surface covered with smooth lumps characteristic of pitted steel. At one point on the circular fracture, slightly to the left-hand side of the front half of the boiler, the metal showed the lumpy surface of pitting across the full thickness of the plate. From this the width of cleanly fractured metal varied considerably. In hardly any place, however, was the width of pitted metal less than half of the original thickness of the sheet. The annular section of plate remaining attached to the barrel showed its original curved form, not the slightest distortion having taken place, and none of the rivets were started.

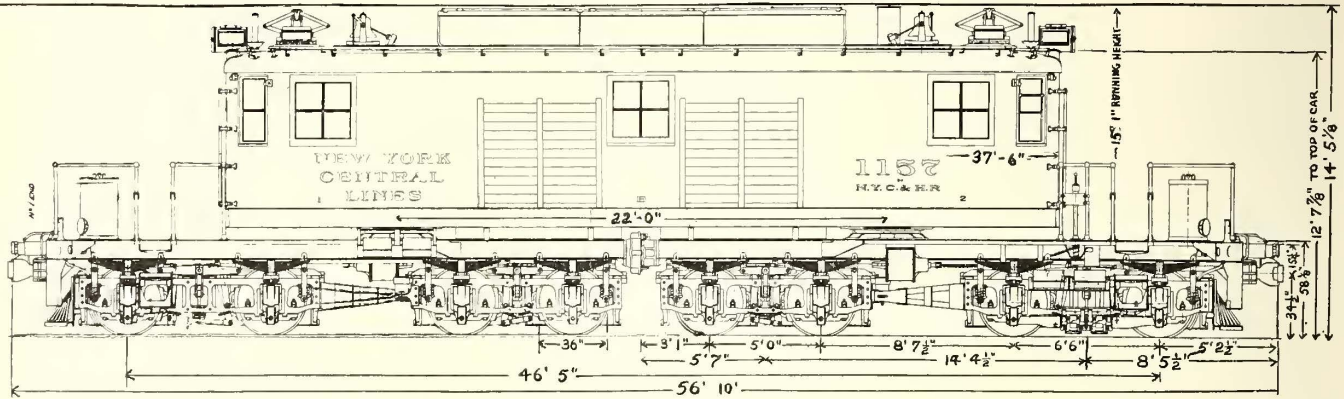
The feed water at the power station is known to be somewhat corrosive in action, as the railway company has renewed the horizontal drums of nine of its Aultman-Taylor boilers during the last seven years. This work was done under the advice of inspectors from time to time, but it is stated that new drums had not been ordered or installed on the Wickes boilers. The company which carried the insurance on the boilers in the plant was changed within the last year, and, according to the railway company, the Maryland Casualty Company is carrying the insurance at the present time. No definite information as to the date of the last internal inspection of the exploded boiler is available, but it is reported that an internal inspection was made both by the police and by the interested insurance company about one year ago.

The sale of American electrical machinery and supplies in Japan during 1912 was the largest in the history of this line of business in the empire. The total sales of electrical supplies for the year aggregated more than \$5,000,000, the bulk of the imported products coming from America. The principal business during 1912 consisted of the extension of existing light, power and railway stations. The Tokyo Municipal Railway, for instance, purchased \$300,000 worth of apparatus for transforming high-tension current in its various substations throughout the city to the trolley voltage.

**POWERFUL ELECTRIC LOCOMOTIVES FOR THE
NEW YORK CENTRAL TERMINAL**

The New York Central & Hudson River Railroad has recently ordered six additional electric locomotives from the General Electric Company for terminal service out of New York City. These are similar to the ten electric

The motors are provided with ample, forced-air ventilation, and they are electrically connected permanently in parallel in pairs, the pairs being connected in three combinations; namely, series, series-parallel and parallel. They are insulated for 1200 volts, so that if at any future time it should be desired to operate the locomotive on this voltage, the pairs of motors could be changed from



Side Elevation of New York Central Locomotive

locomotives purchased earlier in the year and described in the *ELECTRIC RAILWAY JOURNAL* for April 12, 1913. While the new machines are of the same type and construction, they are somewhat heavier, weighing 110 tons, and owing to recent advancement in locomotive design, they have materially increased capacity for continuous service.

The weight of trains which are being hauled out of the terminal is increasing steadily, and some of the more important trains now weigh over 1000 tons. It has therefore been deemed desirable to have engines for the maximum service with very great continuous capacity, ample overload and high momentary rating. The new locomotives are able to exert practically the same tractive effort continuously that the previous locomotives can for one hour. The 10-ton increase in weight in the new machines is accounted for mainly by the greater amount of material in the motors, which are of larger capacity. However, the speed and torque characteristics have been kept practically the same, but capacity has been provided for hauling approximately 40 per cent greater tonnage in continuous service.

The previous 100-ton locomotives have a capacity for developing 1460 hp continuously and 2000 hp for one hour, and they can develop as high as 5000 hp for short periods. This corresponds to a tractive effort of 9000 lb. at 60 m.p.h. continuously, or 13,500 lb. at 54 m.p.h. at the one-hour rating. The new engines will develop 2000 hp continuously, or 2600 hp for one hour. The equivalent tractive effort is 14,000 lb. at 54 m.p.h. continuously, or 20,000 lb. at 49 m.p.h. at the one-hour rating. They are able to haul 1100-ton trains in continual service between the terminal and Harmon, and they are capable of operating 1200-ton trains on level tangent track continuously at 60 m.p.h. in emergency service.

In point of design and construction the new machines will be of identically the same type as the former ten engines, having an articulated frame with bogie guiding trucks at each end. The cab containing the engineer's compartment and that for the operating mechanism are swung between the two parts of the frame on center pins. Each section is equipped with two-axle trucks having a driving motor mounted on each axle. All the axles are, therefore, driving axles, and the eight motors, of the bipolar gearless type, are of the same general design as the motors on all the previous New York Central locomotives.

parallel to series connections and the same speeds and control combinations obtained as on 600 volts.

The new locomotives are now under construction in the works of the General Electric Company at Schenectady. Compared with existing types, these machines have exceptionally great capacity and high efficiency, but the total weight, weight per driving axle and "dead weight" are, nevertheless, exceedingly low.

COMMUNICATION

PROPOSED ASSOCIATION OF PURCHASING AGENTS

METROPOLITAN STREET RAILWAY COMPANY
KANSAS CITY, Mo., Nov. 4, 1913.

To the Editors:

Having been at the last three conventions of the American Electric Railway Association, it occurs to me that some arrangements should be made whereby the purchasing agents of the different companies would meet together during one or more sessions at the convention. While the sessions might not be of sufficient importance to receive recognition similar to the Accounting, Engineering and Transportation associations, I believe informal meetings would at least be justified, under the direction of the association officials.

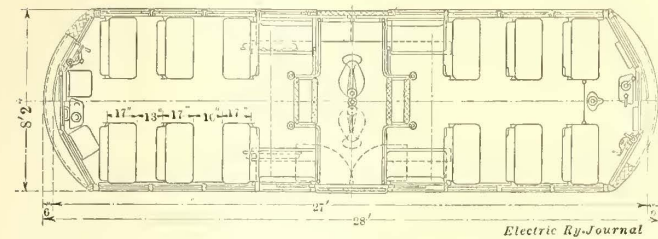
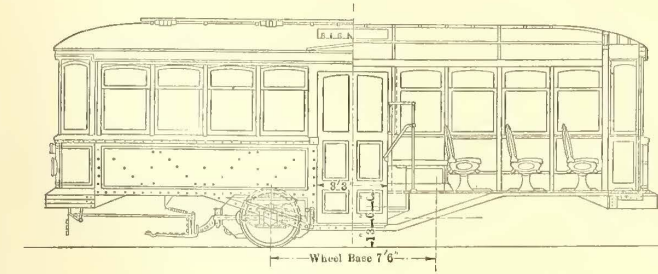
At the convention there are always several purchasing agents present, but they are brought together only by chance meetings. While these are, of course, profitable, I am sure, if arrangements were made in the program of the convention to cover the suggestions made above, that it would not only be agreeable to the members in attendance but the information obtained would benefit the companies represented. It seems to me the question of efficient purchases and intelligent disbursement of funds is of almost equal importance to the best methods of increasing the receipts of a company. I shall be interested in the opinion of others regarding this question.

E. E. STIGALL, Purchasing Agent.

A new electric line has just been completed in Messina, Sicily, by a Belgian company. There are now three lines in Messina, and with the new line the number of cars in operation has been increased during the past year from twenty-five motor cars to thirty-five motor cars and twenty trailers. All cars are of Belgian make.

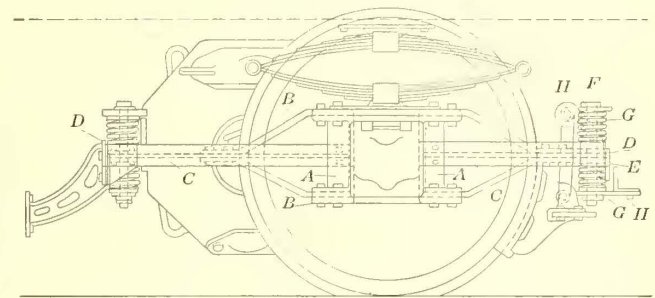
TRUCKLESS AND SINGLE-TRUCK CENTER-ENTRANCE CARS

Two ingenious adaptations of the side-girder center-entrance car for use with but four wheels instead of eight have recently been patented by Axel Ekstrom, consulting engineer Delaware & Hudson Railroad. Mr. Ekstrom has



Plan and Elevation of Center-Entrance Truckless Car, 28 Ft. Over All

quire no machining. The top and bottom bar *B* and *B* are flat bar forgings. The two end frames consist of two straight T-bars *C* and *C*, tied across with an angle iron *D* and *D* at the ends, from which the motor and brake rigging are suspended. This underframing is bolted horizontally to the body at point *E* and made playable vertically at this point by inserting two springs *G* and *G* between the brackets *H* and *H*, fastened to the car body. It is believed that this construction will eliminate most of the lost motion which has often been observed in swivel trucks and all trucks with housed journals. It also transmits the motive force horizontally to the body instead of vertically, as is the case with bolster trucks and single trucks. The whole underframing can be removed after the body is jacked up simply by removing the bolt *F*. This could not be done,



Detail of Truckless Arrangement at Journals

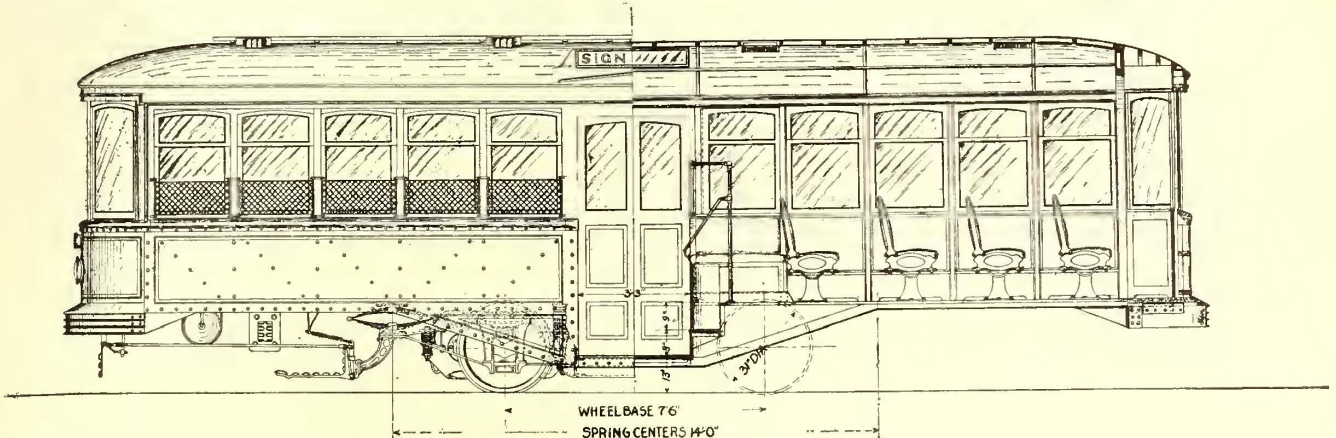
assigned the exploitation of this invention to Cornell S. Hawley, who is the president of the Laconia Car Company, Boston, which will build these designs under the title of the "Laconia center-entrance car." An important point about these cars is the fact that, despite their structural novelty, they are made for use with standard outside-hung motors, journals and brake rigging.

The accompanying side elevations disclose two designs, namely, a truckless car for bodies 28 ft. over all and a single truck of original design for bodies 33 ft. over all. In both the spring suspensions have been placed so as to avoid the oscillation of the ordinary single-truck car. The 28-ft. car is mounted directly on journal pedestal springs of elliptic type placed 7-ft. 6-in. centers, whereas the 33-ft. car

of course, if the motors and brakes were suspended from the car body.

The body design shows the application of side girder and arch roof construction to attain lowest weight. Both bodies have a door opening 3 ft. 3 in., and when wheels of 31-in. diameter are used the heights of the several steps are as follows: step from ground to well of car, 13 in.; two steps inside the car, 9 in. each. The double inside step naturally obviates the use of a ramp. The step heights given can be materially lowered because the wheels can project into the car if smaller motors of equal capacity, such as the Pittsburgh type, are employed.

Only the seating plan of the 28-ft. car is reproduced, as that of the 33-ft. car is similar. In general, transverse seats



Side Elevation of Single-Truck, Center-Entrance Car, 33 Ft. Over All

is mounted on one truck, also of 7-ft. 6-in. wheelbase, having spiral springs at the journals but furnished in addition with elliptic springs set 14-ft. centers at the ends of the truck framing.

The truckless car arrangement is, of courses, of special interest because of the unusual construction adopted to cut down the weight per seat and to eliminate the maintenance of trucks. As shown in the accompanying drawing, the pedestals *A* and *A* are castings of the same pattern and re-

are used on both sides of a 24-in. aisle, but double seats are placed longitudinally at the corners nearest the well. Since the cars are operated double-ended, provision has been made for longitudinal seats opposite the doors and for single seats at the control equipment. When not in use the door seats are pushed under the adjacent seats on the upper floor level while the single seats are swung into pockets. Cabs for the motorman have not been provided, but, as the plan indicates, he can isolate himself by drawing down a

curtain placed between the last pair of transverse seats.

The high seating capacity of these cars is apparent from the fact that the permanent seats of the 28-ft. cars hold thirty-two passengers; with one-half of the temporary seats in use, the car holds thirty-six passengers, while the respective capacities of the 33-ft. cars are forty and forty-four passengers. The plan shows that railings are used only to assist passengers in going up the steps, because the shape of the conductor's reversible pedestal in the well is such as to give, in itself, the desired division of entering and departing traffic.

DIESEL LOCOMOTIVE FOR PRUSSIAN-HESSIAN STATE RAILWAYS

The first Diesel engine locomotive has been recently supplied to the Prussian-Hessian State Railways by the Gesellschaft für Thermo-Lokomotiven, Ludwigshafen, Germany, a company which was formed by Sulzer Brothers, State Construction Councilor Klose and the late Dr. R. Diesel. The locomotive was designed by Messrs. Klose and Diesel, its frame, running gear and body were furnished by A. Borsig, Berlin-Tegel, Germany, and it was assembled by Sulzer Brothers at Winterthur, Switzerland.

The locomotive embodies main four-cylinder V-engines, working on to a crank shaft coupled to the driving axles, and an independent air-compressor set of about one-fourth

wheels and disk cranks are counterbalanced. Each cylinder cover has four valves, namely, a fuel valve, through which fuel is injected into the cylinder under a pressure of 50 to 70 atmospheres (711 lb. to 1000 lb. per square inch absolute); a starting valve for the supply of air to the cylinder at a pressure of 50 atmospheres (711 lb. per square inch absolute), and two scavenging valves for low-pressure air, at about 20 lb. absolute pressure. Between the four cylinders of the main engine there are placed two double-acting piston pumps and a multi-stage air pump. All of these are driven off the connecting rods of two of the main cylinders by means of links and rockers. The three-stage air pump acts as a reserve for the auxiliary compressor set, and if the latter should fail, the engine air pump can supply sufficient air, provided the demand on the locomotive is not too great.

The engine of the auxiliary compressor set is of the two-cycle Diesel type developing about 250 effective hp. When the locomotive is standing, or when only a little air is needed by the main engine, the auxiliary compressor supplies a battery of air cylinders. From the auxiliary compressor the air is passed through coolers. From the cooler for the high-pressure air the air can be conveyed to the cylinders for starting, stored for injection purposes or stored in an auxiliary air reservoir for starting up the auxiliary compressor set. The injection-air reservoir also communicates with the auxiliary compressor set, for which it supplies injection air. In addition to the compressors,



General View of Diesel Locomotive for Prussian-Hessian State Railways

or one-fifth the power of the main engines. The compressor furnishes air for starting the main engines.

The locomotive illustrated is designed for fast traffic. It has a length over all of 54 ft. 6 in. and a weight of 95 tons. The driving-wheel base is 12 ft. The end trucks each have a wheelbase of 7 ft. 3 in. and they are 34 ft. 6 in. apart, center to center. The driving wheels are 68.8 in. in diameter on the tread. The driving axles have a diameter of 7.9 in., increased to 8.3 in. at the journals, which have a length of 10.2 in. The drive from the engine is transmitted to the wheels through coupling rods, from outside disk cranks on the end of the engine crank shaft.

The main engines are of the reversible two-cycle type, single-acting. There are two pairs of cylinders, inclined at 90 deg. to each other. Facing cylinders drive on to a common crank pin, with forked connecting rods. The two cranks are set 180 deg. apart. When running at 304 r.p.m. the locomotive travels at a speed of 62 m.p.h. The driving

etc., there are also pumps for lubricating under pressure all bearings inclosed within the crank chambers, pumps for the jacket water and the water circulation for cooling the pistons, and fuel pumps. There are, further, four hand-operated centrifugal pumps in the cab for charging the pipe system before starting up.

The locomotive has two pony trucks with wheels of 39.4 in. diameter, and these enable it to take curves of 590 ft. radius. The weight taken by the pony trucks is transferred to the axle through leaf springs. The coupled wheels also have similar springs while double spiral springs are provided in the hangers. The Westinghouse brake is fitted to all wheels, and hand-brake rigging is provided on the drivers. Air pressure for the brake is obtained from one of the stages of the compressor, which supplies a special brake air reservoir. Air sanders are fitted in front and behind the coupled wheels.

The fuel and circulation water are contained in four

side tanks constructed at the corners of the engine; a silencer is provided in the roof, and the necessary radiators, etc., are also supplied. The sequence of operations is as follows: The auxiliary engine has first to be started up by admitting air to it, slowly at first, from the air reservoir. After the auxiliary has been changed over to oil fuel, the pressure in the air-storage cylinders rises and air supply is admitted to the main engine, which consequently begins to work. When a speed of about 6 m.p.h. has been reached the starting air valves are thrown out of action and the engine is changed over to oil fuel and works normally, the fuel feed and the injection air being controlled according to the speed and power required. To stop, it is only necessary to cut out the fuel valve and apply the brake. To reverse, the hand wheel in the cab is operated, locking gear preventing reversing until the fuel valves have been thrown out of gear.

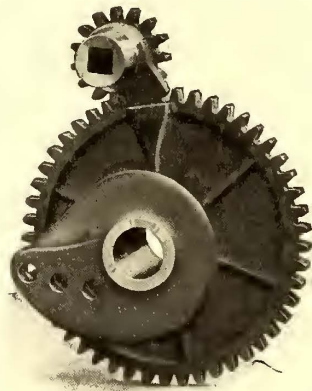
The earliest trials of this locomotive were made on the Winterthur-Romanshorn line, and the engine was sent to Berlin in March, 1913. The speed on that line varied from 12 to 60 m.p.h. Further trials have been carried out on the Berlin-Mannsfeld line.

GEARED BRAKE WITH SPECIAL RELEASE FEATURE

The National Brake Company, Inc., Buffalo, N. Y., has made the following improvements in its well-known "Peacock" geared brake: lighter frame, absence of contact between frame and chain and introduction of stops to prevent the drum from unwinding beyond the point of full release. This brake is located under the platform of the car, entirely below the floor line. The pinion, which is carried in a cup-shaped bearing at the forward end of the frame, has a square hole cored through its entire length. The fitting of the brake staff to the brake consists only of forging the end so that it will fit freely the squared hole of the pinion. Owing to the space occupied by the crown piece, there is ample room to do the forging without the necessity of removing the foot ratchet from the staff.

The most striking feature of the improved brake is the introduction of a stop on the pinion and a corresponding stop on the gear, as illustrated in the accompanying cut. These stops interact to form

Gear and Pinion of New Brake



a stop motion device to prevent the drum from unwinding beyond the point of full release. They are so located as to prevent the chain from unwinding beyond a point at right angles to a line extending through the center of the drum and pinion. This is the most favorable position for a quick recovery of the chain. By this arrangement the chain begins to wind on the large part of the eccentric, thereby giving the quickest possible take-up to the slack and applying the full braking power to the shoes with a saving of a full turn of the brake handle. This improvement not only overcomes the objection that some geared brakes require too much winding of the brake handle but also obviates the power waste which otherwise is caused by motormen who are tempted to run the car with the brakes partially set. With the new brake the motorman can let the brake fly off with the assurance that it will not over-run on the release, and that when he comes to make a new application the brake

will take hold as soon as he begins to turn the handle.

This brake is made with two styles of drums. The brake geared 17:47 is for single-truck cars up to 26,000 lb. in weight and for double-truck cars up to 30,000 lb. in weight. This brake has the eccentric at the top of the drum so that the chain winds from the top downward as this is the tendency in single-truck cars and many types of double-truck cars. All parts are made of malleable iron and supplied with either a 7/16-in. straight link chain or a 3/8-in. twist link chain. Like all other "Peacock" brakes this brake is equipped with roller bearings to minimize friction. The chain tension to be obtained with the use of this brake varies from 713 lb. to 1498 lb. according to the pressure applied (50 lb. to 75 lb.) and the length of the handle (10 in. to 14 in.).

The brake geared 15:49 is for double-truck cars between 30,000 lb. and 35,000 lb. in weight and single-truck cars weighing more than 26,000 lb. In this design, however, the eccentric is at the bottom of the drum so that the chain winds from the bottom toward the top. On cars with drop platforms the manufacturer has found that as the chain becomes taut when the brake is applied its tendency is to draw upward. This type of drum, therefore, allows the chain to take its natural course and prevents any possibility of its catching on the lip of the eccentric. In short, this drum is designed to secure the most direct pull on the brake rod when the tension on the brake is greatest. In this drum three places have been introduced for attaching the chain in the eccentric in order to afford a quick and easy method of adjusting the chain to suit the amount of leverage on cars of different types. The chain tension to be obtained with the use of this brake and a 7/16-in. straight link chain varies from 843 lb. to 1770 lb. When this type is geared 12:52 for double-truck cars in excess of 35,000 lb. the range of chain tensions is from 1118 lb. to 2348 lb.

TEXAS CITY STREET RAILWAY ESTABLISHES SERVICE

The Texas City (Tex.) Street Railway on Sept. 2 inaugurated service over its 3 miles of track in Texas City with two McGuire-Cummings double end, semi-convertible motor cars and two open trailers. The motor cars are of the latest type, without vestibules and with automatic door and step control. They are operated from the front end with one man. Johnson fare boxes are used.

Each car is equipped with two 30-hp Westinghouse motors operating at 500 volts. The voltage is obtained from a motor-generator set driven by a Westinghouse 350-kva steam turbine, which also furnishes alternating current for city lighting. The power house equipment is so arranged that when the capacity of the 350-kva machine is exceeded by the current demand the motor-generator set can be connected with a similar machine of 600 kva. The motor-generator set, besides furnishing current for the street cars, supplies direct current for the operation of the overhead cranes and floor conveyors that form part of the warehouse and dock equipment of the Texas City Transportation Company, owner of the ocean terminal system recently completed at an outlay of \$5,000,000.

The street railway system traverses the entire length of the principal business streets, with dead ends leading to the docks, to the railway station and to a north end addition. Grooved trolley wire of ooo quality is used for the overhead work, with no feeder lines. The track, which is laid with 60-lb. rails on No. 1 cypress ties, is bonded with 0000 copper wire.

Only forty cars of the Metropolitan Street Railway, Kansas City, Mo., now are of the single-truck type. The single-truck cars are being pulled in as fast as possible and replaced with double trucks. The changes are being made in the company's shops,

News of Electric Railways

Decision of Detroit Arbitrators in Regard to Working Conditions and Wages

The decision of the board of arbitration appointed to pass on the differences between the Detroit (Mich.) United Railway and its motormen and conductors on the question of wages and working conditions was made public on Oct. 29. The report in full filed by the arbitration board follows:

"We, the members of the arbitration board agreed upon by the respective parties on Aug. 16, 1913, and to whom was referred for the purpose of arbitration Sections 6, 15, 19 and 21 of the agreement now in existence between the Detroit United Railway and the members of the Amalgamated Association of Street & Electric Railway Employees, Division No. 26, do hereby make the following award to take effect Nov. 1, 1913:

"Section 6 of said agreement shall read as follows:

"Section 6. That all members of the association in the active service of the railway, and the secretary and business agent of Division No. 26, Detroit, shall be given pass cards or passbooks entitling them to free transportation over all the lines owned, operated or managed by the railway, excepting on interurban lines, on which only conductors and motormen shall be allowed to ride free on their respective divisions. Transportation over all interurban lines will, upon application to the carhouse foreman, be issued to the members of the association at the option of the railway, said transportation to be under the supervision of the officers of the railway. Any abuse of this free transportation privilege shall entitle the railway upon mutually satisfactory proof to the parties hereto to discharge the person abusing it."

"Section 15 shall read as follows:

"Section 15. That nine to ten hours with one-half trip leeway on each respective line shall constitute a day's work on all schedules for all regular motormen and conductors to be completed within twelve consecutive hours, excepting where it is absolutely necessary in order to accommodate the service that it be completed within twelve and one-half hours. No schedule shall show less than 52 per cent regular runs nor more than 48 per cent swing runs. Regular men are to have one relief for meals, and otherwise, where compelled to swing from one relief to another, they shall be paid for such relief time."

"A regular run is a run on a schedule of eight hours or over completed within the time specified in the first paragraph of this section.

"All regular runs shall pay at least eight hours' time, and the time between the early and late runs shall be divided as nearly equally as possible, and no regular motorman or conductor shall be permitted to run any tripper or other run except owing to the failure of the relief crew to report and there being no extra man available, other than his regular run, oftener than once in each seven consecutive days, and if a regular motorman or conductor is assigned or required to run the same oftener than once in seven consecutive days the railway shall allow double the time as shown on the schedule for such work, and no regular motorman or conductor who goes off duty after 12 o'clock midnight shall be required to report until the regular showing-up time for his run to go out the following day.

"On interurban and suburban lines where regular motormen and conductors are required to perform service after and beyond the expiration of a day's work as defined in paragraph 1 of this section, they shall be paid in addition to what they now receive under this agreement an additional 10 cents per hour for all such extra time; provided that the company shall not be required to pay such additional 10 cents per hour in any case where under this agreement the conductors and motormen are entitled to double time.

"A swing run is a run on the schedule of six hours or over, not completed within the time specified in the first paragraph of this section. All swing runs shall be made in the shortest number of hours possible, and it will

be the policy of the railway at all times to reduce the percentage of swing runs and increase the percentage of regular runs wherever the traffic conditions will permit. No swing run shall pay less than six hours' time, and where motormen and conductors are compelled to swing from one relief to another, and the time between said relief is thirty minutes or less, they shall be paid actual time for such relief, and the railway agrees at any time that the association can show where swing runs can be consolidated into a regular run without interference with the demands of the traffic or the regular scheduled runs, the same will be put into effect.

"Where men are called upon to show up for a run of any kind, and they are not used or sent out, they shall receive one hour's pay for responding to such call, and wherever motormen or conductors have been selected or detailed for runs and a portion of a run is cut off they shall receive the full schedule time that the run would have paid had the full run been completed, but nothing in this provision shall apply where runs are canceled or shortened for causes due to fires, rains, storms, snow, accidents, or other emergencies beyond the control of the railway, nor shall this apply in the case of extras who may be required to show up to protect the board.

"All crews shall start from and get off at the same carhouse, and all men shall be paid for all the time in excess of ten minutes that is required for them to go from their reporting place to the place where reliefs are made, and where men are called upon to do any work they shall be paid from ten minutes after the time they have been instructed to report. Ten minutes shall be added to each man's run on the different timetables to cover the actual time consumed in moving cars in and out of the carhouses.

"There shall be at least one sub-extra for every three regular cars on each line. This number of extras, if not sufficient, shall be increased by mutual consent of the parties to this agreement. No regular man shall be required to do any extra work when an extra is available.

"The first run of less than eight hours shall be considered as first extra, and where a man misses his run he shall, at the option of the railway, lose that day; provided that he shall not be assigned during that day to take the run which he has missed. And where a man misses his run in the middle of the day he shall, at the option of the railway, lose the rest of that day and the day following, provided that he shall not be permitted on either of said days to have the run which he missed. Where he does not show up for two hours after his run goes out, he shall be placed last sub-extra for seven days, and if he misses twice in thirty days, he shall be placed last sub-extra for seven days; and if when serving as last sub-extra he misses, he shall serve seven days more for each miss. Extras to be governed in like manner when missing reporting time.

"All runs under six hours on the timetable shall be run by sub-extras. A sub-extra is one who has no regular run assigned.

"Whenever the cars are delayed so that a conductor or motorman cannot reach his reporting place on time, no miss shall be marked against him, but if he arrives before his car goes out he shall be allowed to take it. This provision for late cars shall not apply to men who live within one-half mile of the carhouse or reporting station."

"That Section 19 shall read as follows:

"Section 19. Claims for shortage shall be made within fourteen days after date of shortage, and shall be accompanied by the trip sheet of the day of said shortage. Each conductor on cars equipped with Ohmer registers will, upon request, be shown the register reporting sheet for the day of shortage. Duplex or tear tickets, or tickets having variable values, to be returned with claims for shortage to respective carhouses."

"Section 21 shall read as follows:

"Section 21. From and after Nov. 1, 1913, the rate of pay for all motormen and conductors who have been in the service of the company one year or more, 32 cents per hour.

"For all motormen and conductors who have been in the service of the company less than one year and more than three months, 30 cents per hour.

"For all motormen and conductors who have been in the service of the company under three months, 25 cents per hour.

"The minimum pay to each motorman and conductor for the first three months of his employment shall be at the rate of \$19 for each half-month pay-roll period. In case of absence from duty, such amount shall be reduced in the proportion that the days absent bear to the number of days in the pay-roll period. Any such conductor or motorman who works more than an average of five hours per day during any pay-roll period shall be paid for such full time at 25 cents per hour.

"No single trip shall be considered less than one hour. This shall not apply where men are required to continue on their run due to the failure of a relief man to report and there being no extra available or due to emergencies as defined in this agreement.

"It is agreed that for the purpose of rating men as to pay who may be employed after this award goes into effect, the date on which they shall receive the next highest scale of wages shall be three months from the first day of the month succeeding the day on which they were employed."

Metropolitan Ordinance Introduced in Council

The ordinance granting a thirty-year franchise to the Kansas City Street Railway, which will succeed the Metropolitan Street Railway, Kansas City, was presented to the council at a special meeting recently and referred to the joint committee of the two boards. The upper house referred the ordinance to its committee on rules and committee assignment, while the lower house referred the grant to the committee on streets, alleys and grades. The joint committee is composed of seven members and will hold public meetings at the city hall, where suggestions will be received. The company has been requested to print and distribute 1000 copies of the ordinance as it now stands. The ordinance in its salient features is the same as that proposed several months ago. The only changes which have been made in the grant are of a minor nature. It is probable that others of more importance will take place before the ordinance is passed by the Council and referred to Kansas City residents for their vote.

Mayor Jost has announced the personnel of the committee of five men who will represent the city on the board of control provided by the terms of the ordinance. The men the Mayor proposes to appoint to represent the city are D. M. Pinkerton, cashier of the Gate City National Bank; William T. Kemper, president of the Commerce Trust Company; John W. Wagner, president of the German-American Bank; F. E. Gloyd, of the Gloyd Lumber Company, and John H. Wiles, of the Loose-Wiles Biscuit Company. The Metropolitan Street Railway is entitled to six representatives on the board of control.

Labor representatives are anxious to secure an amendment providing that the company shall permit its employees to organize and submit differences between the officers of the company and the men to arbitration. The delegation was referred to the Council committee by Mayor Jost. Efforts will be made to have the people vote on the ordinance before the spring election so as to keep the franchise out of politics.

P. J. Kealy, engineer for the receivers of the Metropolitan Street Railway, and T. R. Ash, engineer for the city, have prepared for general distribution a report on the future earnings and expenditures of the Kansas City Street Railway, based on the proposed ordinance.

Mayor Jost's plan provides for a valuation of \$30,000,000 and for \$7,500,000 to be amortized out of the surplus earnings before the company participates to any extent in the surplus earnings over the fixed return of 6 per cent upon the \$30,000,000.

When the \$7,500,000 is amortized out of surplus earnings, the company participates to the extent of 33 1/3 per cent and the city to the extent of 66 2/3 per cent in the surplus earnings over and above the fixed return of 6 per cent on the then capital value. On the basis of these pro-

visions, Messrs. Kealy and Ash have calculated that the city will take control of the property subject to a bonded indebtedness of one-half of the capital value in the year 1932 or 1933.

During the remaining life of the present franchise, or "peace" ordinance—that is, within the period ending May 31, 1925—the company would pay to the city, as 8 per cent of its gross revenue, \$8,919,360. The net return to the city, after payment of all taxes out of this 8 per cent, was in 1912 approximately 3 per cent of the gross revenue, i. e., three-eighths of the total payment to the city. On that basis the net amount which the city would realize under the "peace" ordinance during the next twelve years would be \$3,344,760. Under the proposed new franchise, however, the engineers estimate that the city will receive within the same period an amount aggregating \$12,239,716, or approximately three and seven-tenths times the amount which the "peace" ordinance would return.

The detailed estimates of the engineers are shown by the following table:

Year	Capitalization June 1	Capitalization May 31	Net Earnings 3 1/2 Per Cent	Surplus Over Fixed Return of 6 Per Cent	Accumulated City Surplus
1912	\$30,000,000				
1913	30,366,450	\$30,760,000	\$2,299,150	\$453,550	\$453,550
1914	30,528,037	31,066,450	2,402,400	538,413	991,963
1915	30,755,819	31,383,637	2,510,200	627,218	1,619,181
1916	30,884,568	31,610,819	2,622,900	726,251	2,345,432
1917	31,003,792	31,834,568	2,740,850	830,776	3,176,208
1918	31,006,970	31,953,792	2,864,050	946,822	4,123,030
1919	30,881,538	31,956,970	2,992,850	1,075,432	5,198,462
1920	30,617,330	31,831,538	3,124,100	1,214,208	6,412,670
1921	30,208,113	31,472,330	3,241,000	1,352,660	7,765,330
1922	30,064,004	31,063,113	3,362,450	1,498,663	9,264,000
1923	29,830,131	30,919,004	3,488,450	1,638,310	10,902,310
1924	29,499,870	30,685,131	3,619,000	1,777,892	12,680,202
1925	29,066,284	30,354,870	3,754,800	1,932,878	14,613,080
1926	28,619,935	30,016,284	3,895,500	2,094,523	16,707,603
1927	28,058,432	29,569,935	4,041,450	2,267,254	18,974,857
1928	27,373,436	29,003,432	4,193,000	2,452,494	21,427,351
1929	26,556,280	28,323,436	4,350,140	2,650,734	24,078,085
1930	25,596,998	27,506,280	4,514,300	2,863,923	26,942,008
1931	24,607,844	26,641,998	4,649,750	3,051,230	29,993,238
1932	23,486,257	25,632,844	4,789,050	3,249,880	33,243,118

One of the first estimates affecting a discussion of future earnings was that of the increase in population. On the basis of United States census reports for 1910 and prior studies in population increase the estimated population for Kansas City, Mo., in 1920 was 475,000; in 1930, 620,000; in 1940, 790,000, and in 1950, 960,000. In computing the gross earnings the following increases were allowed: 4 1/2 per cent per annum during the first decade, 3 3/4 per cent per annum during the decade ending 1930, 3 per cent per annum during decade ending 1940, and 2 1/4 per cent per annum during decade ending 1950. These rates of increase, while somewhat higher than the rate of increase in the population, are considerably less than they would have been had the usual law of squares been followed. These increases result in gross earnings from \$6,864,000 in 1914 to \$22,189,000 in 1950.

The operating ratio during the years under construction was taken as 65 per cent of the gross revenue and includes not only the ordinary operating expenses but likewise taxes and depreciation. The reported operating ratio of the company for the fiscal year 1912 was 63 per cent. Net earnings are estimated to rise from \$2,402,400 in 1914 to \$4,789,050 in 1932.

The new capital which will be required from year to year was estimated on the basis of the additional track mileage necessary to handle adequately the expected increase in business. The appraisal of the physical property of the Metropolitan Street Railway shows that the cost per mile, excluding such items as real estate and right-of-way, averages approximately \$95,000 per mile of single track. The track mileage is increased from 271 miles to 650 miles throughout the period ending in 1950. This additional mileage, on the basis of \$95,000 per mile, necessitates an additional investment of \$36,000,000. The cost new of the existing track is approximately \$29,000,000, so that the cost of the existing system plus the additions which it is estimated will be necessary during the period ending 1950 would provide a capitalization at that year of approximately \$65,000,000. On the basis of the mileage provided

for, the earnings per mile of track will be approximately \$34,000, in comparison with the present earnings of the Metropolitan System per mile of track, excluding the mileage of the Westport Belt Line, of about \$26,000 per mile.

The Boston Arbitration Hearings

The arbitration board sitting in the Boston Elevated Railway investigation of labor matters heard testimony recently by various officials of the company bearing upon employment, the training of motormen and conductors, traffic requirements and wages. Alfred J. Guyon, superintendent of employment, testified that 80 per cent of the men leaving the company's service did so within two years of their acceptance. In the year ended June 30 last, 14,354 applicants for work were interviewed by the superintendent of this department, and of these 9300 were immediately rejected. After final examination 1843 were rejected, and the total number appointed to the service was 2005. Between Sept. 1, 1910, and Oct. 20, 1913, 3371 persons applied at the employment office of the company for work in the shops. Of the applications for shop work made at the shop offices the employment department had no record. The company experienced no difficulty in obtaining men for its service.

Joseph L. Webber, superintendent of Division 1, presented new statistics of interest from the traffic standpoint. To allow for misses the number of employees carried by the company is materially increased. In eight months in the witness's division there were 1940 misses by conductors, and 316 out of 422 conductors failed to report on time. Out of 430 motormen, 193 missed, the total number of misses being 939. A study of the average length of a day's work for a week for extra men showed that conductors on this list at a representative rating station worked from six hours twenty-four minutes to ten hours forty minutes, and motormen worked from four hours fifty-six minutes to eight hours fifty-two minutes. To illustrate the burden of "setback" cars which are required to maintain the schedule when regular cars are delayed, the following table was submitted, covering the year ended Aug. 31 last:

Div.	Trips Run	Setback Trips	Setbacks % of Trips	Headquarters Office
1	1,091,691	27,958	3	Dudley St., Roxbury
2	728,691	37,265	5	Tremont St., Roxbury
3	533,450	21,584	4	Field's Corner, Dorchester
4	322,348	6,193	2	East Boston
5	353,751	5,486	1.06	South Boston
6	1,006,180	31,135	3	Sullivan Sq., Charlestown
7	1,020,863	40,203	3.9	Bennett St., Cambridge
8	This division occupies down-town Boston; no car houses.			101 Milk St., Boston
9	531,296	51,107	9.6	Brighton
Total	5,588,270	220,931	3.9	

Chairman Storrow ruled during the hearings in the face of vigorous protests by the employees' organization that the company might introduce testimony showing the probable effect of the so-called nine-hours-in-eleven act upon its operations.

Prof. Albert S. Richey of the Worcester Polytechnic Institute, consulting engineer for the Bay State Street Railway and the Boston Elevated Railway upon timetable matters, explained in detail the methods of preparing schedules and the difficulties sustained in providing timetables in accordance with the foregoing act. It was brought out by counsel that the employees' organization is holding the enforcement of the nine-hours-in-eleven law over the company's head as an instrument by which to force wage increases. The act went into effect in July, but pending the decision of the arbitration board in the matter of wages, the employees' association is not requiring the company to operate its service upon the nine-hours-in-eleven basis. The schedules now in effect are those resulting from the inauguration of the ten-hours-in-twelve act of 1912, on Jan. 1, 1913. The association has offered to permit the company to operate its lines upon the latter basis if it will grant the desired increase in wages, but the company estimates that if the wage increase is not granted and the law is enforced, its operating costs will be augmented by \$1,000,000 a year by virtue of the drastic terms of the act.

Prof. Richey presented curves and data showing the relation between traffic and car crew requirements on the Boston surface lines for Aug. 27, 1913. The witness said that one of the first principles of timetable making is to

work every man possible during the morning and afternoon rush hours. He estimated that the enforcement of the nine-hours-in-eleven act would raise the number of motormen and conductors required for normal schedule operations from 3782 to 5294. Allowance of 10 per cent more to cover layoffs and misses and 10 per cent to include work cars, baseball extras, opera cars, etc., would have to be made to handle the traffic properly. If the new law were enforced, 2268 men would have regular runs, performing 19,827 hours of paying work per day and averaging eight hours forty-five minutes each. To handle the rest of the work, 3026 men would be needed, performing 10,624 paying hours of work on the basis of two hours fifty-one minutes per man. On the existing schedule arrangement of July 1 last there were 2146 men having regular runs, averaging nine hours seven minutes work per day; 800 swing runs, averaging eight hours fifty-one minutes per day, and 836 trippers, averaging three hours fifty-three minutes per day.

Matthew C. Brush, second vice-president, in charge of the bureau of operation, testified at length regarding comparative wages on the Boston system and elsewhere. Chairman Storrow ruled that evidence regarding wages outside Massachusetts would not be considered by the board, without full details as to working conditions. Comparisons were made between the wage scales of other companies and those in force at Boston, these being summarized according to companies connecting with the Boston Elevated system, to other Massachusetts roads and to all Massachusetts systems. The Boston Elevated Railway pays 25.6 cents per hour for first-year men; connecting companies pay 22.25 cents for the first half-year and 22.37 cents for the second half-year. Companies not connecting pay 22.16 and 22.63 cents. The Boston wage for second-year men is 26.2 cents per hour. Connecting roads pay 23.62 cents and other companies, 23.9. On the whole the Boston Elevated Railway's rates are higher than the others to about the tenth year, when all pay approximately 27.5 cents per hour. After the tenth year the other companies gradually increase to a maximum of about 27.7 cents, compared with increases to from 28.2 to 28.9 cents on the Boston system.

Advertising for Bids for Rapid Transit Work in New York

The Public Service Commission for the First District will advertise soon for bids for the construction of three sections of the new subway and elevated lines in the Bronx—one on the White Plains Road extension of the existing subway, one on the Jerome Avenue branch and another on the Southern Boulevard branch of the Lexington Avenue subway. Bids on the White Plains Road contract will be opened on Nov. 26, on the Jerome Avenue line on Nov. 28, and on the Southern Boulevard line on Dec. 1. The section on the White Plains Road line is known as Section No. 2 of Route No. 18 and lies in White Plains Road between Burke Avenue and East 241st Street. The road in this section will be an elevated railroad with three tracks. The Jerome Avenue section is known as Section No. 1 of Route No. 16 and lies mainly in Jerome Avenue between 157th Street and River Avenue and East 182d Street. The road here also will be a three-track elevated railroad and will join the subway now being constructed south of 157th Street. The Southern Boulevard section is known as Section No. 1-A of Routes Nos. 19 and 22 and lies in Southern Boulevard and Whitlock Avenue between East 147th Street and Bancroft Street. This will be a three-track underground railroad as far north as a point in Whitlock Avenue between Aldus and Bancroft Streets, where it becomes an elevated railroad and continues northerly as such.

A public hearing on the form of contract for the reconstruction of the Steinway Tunnel has been called by the Public Service Commission for the First District for Nov. 14 at 12:15 o'clock. This tunnel is already built, and under the dual system agreements was purchased by the city of New York for use in connection with the existing subway. The route covered by the tunnel has been made a rapid transit route, and the work to fit the tunnel for use in connection with the subway will be let by the commission under the usual form of subway contracts. As a preliminary to advertising for bids it is necessary to hold a hear-

ing on the form of contract, and this will be done on Nov. 14.

During the week the Public Service Commission for the First District held public hearings on the forms of contract for the construction of Sections Nos. 1, 1-A, 2 and 3 of Route No. 12, the Flatbush Avenue-Eastern Parkway extension of the existing subway in Brooklyn. This extension runs from the end of the existing subway at Atlantic and Flatbush Avenues through Flatbush Avenue and Eastern Parkway to Buffalo Avenue as a subway, and from that point will be further extended as an elevated railroad through East Ninety-eighth Street and Livonia Avenue. Work on the plans is being completed, and it is expected that bids for construction will be invited some time next month. This line is for operation by the Interborough Rapid Transit Company in connection with the existing subway.

The Public Service Commission for the First District has advertised for bids, to be opened on Nov. 21, for the construction of Section No. 2 of Route No. 39, the New Utrecht Avenue branch of the Fourth Avenue subway in Brooklyn. This section begins near the intersection of Tenth Avenue and Thirty-ninth Street, Brooklyn, and extends as an elevated railroad over Tenth Avenue to New Utrecht Avenue and thence over New Utrecht Avenue and other streets and private property to Eighty-sixth Street; over Eighty-sixth Street to a point near Bay Forty-first Street, and thence over Stillwell Avenue to a point just north of Avenue Y, where a connection will be made with the Sea Beach line to Coney Island. The road here will be a three-track elevated railroad. It will be operated by the New York Municipal Railway Corporation in connection with the Fourth Avenue subway in Brooklyn.

Subway Planned if Toronto Purchase Negotiations Fail

The following statement was made by Mayor Hocken on Oct. 23, in discussing the new phase of the transportation question:

"If the reports of John MacKay & Company and Mr. Couzens, of the Hydro-Electric System, do not justify the purchase of the assets of the Toronto Railway and Toronto Electric Light Company, I will immediately have a by-law prepared to submit to the ratepayers at the January elections to provide for the Yonge Street, north and south, section of the complete subway system reported upon by the former engineer of the Harbor Board."

The report which is referred to dealt with the plan to build a subway at an estimated cost of \$23,000,000. The report showed that the cost per mile for a diagonal underground line would be \$1,350,000, and the Mayor's proposal would be to construct the first branch of the tube north and south to serve the northern part of the city. Owing to the turn of events in connection with the proposed purchase of the railway and lighting property the Mayor thinks Comptroller Church and others who are opposing the proposal are in a rather strange position and has intimated that if the comptroller does not support the purchase he will have to support another of the Mayor's schemes, the tube system.

On Oct. 23 application was made to the Board of Control for a franchise to operate buses on the streets of Toronto. Representatives of the General Omnibus Company, London, Eng., submitted the application. The comptrollers were asked for a five-year exclusive franchise. The company guarantees to deliver twenty buses within sixty days after the order shall have been placed. It would take another two weeks to have the buses delivered in Toronto by steamer across the Atlantic, and within three months the buses could be running in Toronto. The representatives of the English company have offered to sell out at the end of the five-year grant at a valuation 6 per cent above the cost of the service. The buses will accommodate thirty-four passengers.

The Mayor said the city had no power to grant such a franchise and would not make such a grant if it had. Any promoter of a bus service could operate on the streets by getting out a license. The representatives of the English company will not operate without a franchise.

Having analyzed the reports of Messrs. Moyes and Arnold, Works Commissioner Harris, Assessment Commissioner Forman and Mr. Ross, and having no new disclosures with reference to the value or depreciation of the assets of the Toronto Railway and Toronto Electric Light Company, Mayor Hocken stated that the next important development will be the presentation of the reports of John MacKay & Company and H. H. Couzens, general manager of the Toronto Hydro-Electric System.

The Board of Trade and the Trades and Labor Council intend to call special meetings when all the information on the proposed purchase has been laid before the City Council and voice their opinions on the wisdom of supporting the project. In the meantime the majority of the members of the City Council are reserving judgment on the purchase.

Power Brake Order Modified in Ohio

The Public Service Commission of Ohio has modified as follows the order which it made some time ago requiring the Northern Ohio Traction & Light Company "to equip with power brakes, in addition to standard hand brakes, by Jan. 1, 1913, every car operated upon its lines within the city of Akron":

"Ordered, That said defendant be, and it is hereby, authorized to operate on its lines on Grant and Exchange Streets, in Akron, not more than six single-truck cars with standard hand brakes for a period of not more than six months from the date of this order. It is further

"Ordered, That said defendant be, and it is hereby, authorized to operate on what is designated as its Bowery line not more than four single-truck cars with standard hand brakes for a period of not more than six months from the date of this order. It is further

"Ordered, That said defendant be, and it is hereby, authorized to operate on its other street car lines in Akron, except its North Hill line, not more than twenty single-truck cars with hand brakes between the hours of 5 o'clock a. m. and 8 o'clock a. m. and 4 o'clock p. m. and 7 o'clock p. m., exclusive of Sundays and holidays, until the further order of this commission. It is further

"Ordered, That said defendant be, and it is hereby, authorized to operate on its said other street car lines in Akron, except its said North Hill line, not more than twenty single-truck cars with hand brakes on Sundays and holidays between the hours of 9 o'clock a. m. and 6 o'clock p. m. until the further order of this commission. It is further

"Ordered, That on days when baseball and football games are played or circus performances are given in Akron, defendant be, and it is hereby, authorized to put in service and operate on its said other street car lines in Akron, except its said North Hill line, not more than twenty single-truck cars with standard hand brakes not more than one hour before the published time of such amusement or entertainment, and also immediately at the close of such amusement or entertainment until the persons in attendance at such amusement or entertainment have been transported to their destinations, until the further order of this commission. It is further

"Ordered, That said motion, in so far as it relates to the use of cars without power brakes on defendant's North Hill line be, and the same is hereby, overruled. It is further

"Ordered, That said motion, in so far as it relates to the use of any greater number of cars without power brakes on any or all of defendant's lines in Akron than the total of thirty herein specified be, and the same is hereby, overruled."

Subway Recommended for Surface Lines in Chicago Loop District

A limited subway system for the surface railways has been recommended to the local transportation committee of the Chicago City Council in the report of the supervising engineers as a means of relieving the constantly increasing congestion in the loop district in Chicago. According to the estimates presented by Bion J. Arnold, the cost of the proposed project in its entirety would be \$14,500,000. The

plan consists of a north and south subway in Clark Street, extending from West Twenty-second Street to Chicago Avenue or North Avenue, with a northern terminus near Lincoln Park. This separate system, it was estimated, would cost \$9,600,000.

The plan suggested for the West Side would cost \$4,900,000. The route recommended would begin at the east end of the Washington Street tunnel, run east in Washington Street to Michigan Avenue (or south in Franklin Street to Madison Street and then east to Michigan Avenue), south in Michigan Avenue to Jackson Boulevard, west in Jackson Boulevard to Franklin Street, south in Franklin Street to the east end of the Van Buren Street tunnel. In addition to these routes other subways were recommended for the future, and among these are mentioned Halsted Street and Milwaukee Avenue, together with the opening of the present closed parts of Robey Street and Ashland Avenue. This work would cost more than \$4,000,000.

All of the recommendations in the report are based upon the provisions for subways placed in the 1907 ordinance. The construction of the proposed system, if built, is anticipated to be done by using the city's traction fund and renting the subways to the companies. In building the proposed surface line subways it was asserted the tunnels could be so constructed that they would not interfere later in case a comprehensive system should be decided upon.

The report was referred by the transportation committee to a sub-committee which will be appointed later.

Bonds as Investments

In an address delivered at the annual banquet of the Investment Bankers' Association of America in Chicago on Oct. 30, 1913, James J. Hill stated that the former good standing of bonds has been considerably lowered in recent years. The main cause of such deterioration as given by Mr. Hill was that it is partly the effect of the excessive borrowing and spending of the present day and partly that of an expansion of industrial effort and an inflation of the capital of industrial enterprises which has often raised the total of bond issues, heretofore representing the value of the property under the hammer, to approximately the figure that would once have covered stocks and bonds combined. "Formerly," said Mr. Hill, "and always in any properly financed undertaking, the limit of a bond issue is the total cash value of tangible property in possession; not its value for the uses to which it is being or is to be put, but its value as an asset for immediate conversion by forced sale at any time into cash. All that the investor could lose even in case of a receivership would be the interest on his investment for the unrealized terms of the life of his bond. Now not only wild-cat concerns but companies of real merit and solvency, conducted by men who would scorn to do an act commonly recognized as dishonorable, do not hesitate to bond their businesses for very much more than could be obtained from either a forced sale or a careful liquidation." Although this over-issue of bonds is true of most industrial corporations now, according to Mr. Hill, the railroads cannot be criticised on this basis, for it is impossible to place an over-issue of railway bonds. The distinction drawn is this: "If a manufacturing commercial concern liquidates, its property has only current real estate value unless some successor wishes to carry on the same or a similar business and the intangible values are reduced to nothing. The business of a railroad, however, cannot be discontinued. The road and its belongings will always remain there, and they must be operated by somebody. Therefore the security cannot altogether vanish, and experience has shown that it will eventually bring, under wise management, some return in the most desperate cases. Street railway bonds resemble those of the steam railways, except that generally a mere franchise instead of an ownership of property is the main guarantee behind them." In conclusion, Mr. Hill made the following remarks: "The country is waterlogged with bonds. Confidence cannot be restored until the name 'bond' has won back something of its old standard. And that cannot happen until issues are limited by moderation, conformed to the value of the security and confined to the margin of safety and the form of credit for which the bond was originally designed."

Missouri Road to Install Block Signals.—The Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo., contemplates installing an automatic block system, with track circuit. The company has 70 miles of track and will protect it all, according to present plans. The type of signal that the company intends to install has not yet been decided upon.

First Section of Block Signals Completed.—The Louisville & Northern Railway & Lighting Company, New Albany, Ind., has put into use its first section of block signals. The section is 4 miles long, extending north from New Albany. It is intended gradually to extend the use of signals over the whole system. The installation was tested Nov. 1 by the officers of the company and was formally put into use on Nov. 3.

Decision in Regard to the Sale of Power at Winnipeg.—The Public Utilities Commissioner at Winnipeg has denied the application of the municipal power plant of Winnipeg to sell current in St. Boniface without the consent of that city. The St. Boniface Council refused to permit another distribution system to be extended over that city. The Public Utility Commissioner held among other things that there is satisfactory provision at present for the needs of St. Boniface by the service of the Winnipeg Electric Railway, which established a system there under terms imposed by it.

Formal Opening of Hale's Bar Development.—Nov. 13 has been set as the date for the formal opening and dedication of the Chattanooga & Tennessee River Power Company's hydroelectric development at Hale's Bar on the Tennessee River near Chattanooga. To celebrate the completion of the development, the Chattanooga Chamber of Commerce has arranged a special program on that date, which in addition to other entertainments will provide a trip by river to the power house, lock and dam for the purpose of inspection. This is the largest hydroelectric power development in the South.

Progress with 1200-Volt Line in Michigan.—The Michigan United Traction Company, Jackson, Mich., expects to begin operating 25 miles of its western division between Kalamazoo and Battle Creek, Mich., with 1200-volt trolley by June, 1914. As published in the *ELECTRIC RAILWAY JOURNAL* some time ago, twenty-five B2-333 electrical equipments for 1200-volt operation were purchased from the Westinghouse Electric & Manufacturing Company. This equipment is designed to be operated on both the 1200-volt and 600-volt d.c. lines. For the present at least the lines of the Michigan United Traction Company east of Jackson will be operated at 600 volts d.c.

Twelve-Hundred-Volt Operation on the Pittsburgh & Butler Street Railway.—A party of guests of officials of the Pittsburgh & Butler Street Railway were entertained with a trip over the road on Oct. 24 in special cars in celebration of the conversion of the line to operation with the 1,200-volt direct-current system. Dinner was served in the Nixon Hotel, Butler. The guests included representatives of the city government, the Pittsburgh Industrial Development Commission, the Chamber of Commerce and other civic organizations. The road was previously operated with the single-phase system. The company operates 33 miles of line between Pittsburgh and Butler and its equipment includes thirteen cars.

Detroit's Revised Charter Adopted.—The revised charter for the city of Detroit was adopted by a vote of twelve to seven by the charter commission on Oct. 30. This is the second time the charter has been adopted, the first action having been nullified later in order that some further consideration might be given certain points. The attempt of some of the members to have the municipal ownership sections submitted to a vote of the people separately, so that women might vote on them, was defeated. Other changes consisted principally of correction of phraseology and punctuation. Corporation Counsel Lawson rendered an opinion that the charter does not require the vote of the women, as no public utility property is actually being purchased and the bond limit is not being increased. The charter merely provides for carrying out these things. Nov. 3 was the date set for presenting the draft to the

Governor for his signature. The charter will probably be submitted to the electors of the city of Detroit for their final decision in February.

Fare Reduction Question Considered in Portland.—William J. Hagenah, expert appraiser for the Portland Railway, Light & Power Company, testified in regard to the value of the company's property and its earnings at a hearing before the City Council on Oct. 23 to determine whether the company could afford to sell six street car rides for 25 cents as proposed by Will H. Daly, commissioner of public utilities. According to the company's figures, as compiled by Mr. Hagenah, the present value of the company's physical property is \$12,284,487, as compared with \$11,613,733 of Dec. 31, 1912; reproduction cost new of physical property and working capital, Sept. 1, \$14,126,006, as compared to \$13,455,342 of Dec. 31, 1913; present value of physical property, working capital and intangible value or going cost, which is the difference between the 8 per cent profit and what was actually made during the year, Sept. 1, \$18,404,383, compared to \$17,733,629 of Dec. 31. As there are several points regarding the various valuations not understood by the city commissioners, President Griffith has promised to supply additional data in an attempt to clear up these points.

Commission Proposed to Control Toronto Civic Lines.—The City Council has passed a motion to instruct the Board of Control to prepare and report a by-law "covering the organization and powers of a commission to take charge of civic transportation interests." Alderman Wickett explained the need of such a commission's work being defined forthwith and suggested that the commissioners be honorary rather than salaried. Comptroller Church favored the principle but deemed the time inopportune. He thought the commission should not be created until within a year or two of the expiration of the Toronto Railway's franchise and voiced his satisfaction with the conduct of the civic car lines under the jurisdiction of Works Commissioner Harris. Comptroller McCarthy said he believed public opinion was almost unanimously in favor of the transportation interests of Toronto being intrusted to a commission outside the City Council, irrespective of the outcome of the negotiations which are now pending for the purchase of the property of the Toronto Railway and the Toronto Electric Light Company. The motion was carried.

Capitalization of American Railways.—The Railway Business Association has issued in pamphlet form a reprint of an article in the *Saturday Evening Post* by Alba B. Johnson, president of the Baldwin Locomotive Works and vice-president of the association. The paper deals with the question of the overcapitalization of American Railways. According to Mr. Johnson, too much importance has been attached to the question of overcapitalization and too little co-operation evidenced for the invigoration of railway credit through reinforcing railway revenue. Mr. Johnson states that receiverships have wiped out millions of the original capitalization of the railroads, and that since 1894 20 per cent of the railroads in the United States have undergone a wholesale scaling down in their original capitalization. The capitalization per mile of line for the United States in 1910, according to Interstate Commerce Commission statistics, was \$62,557; for Germany, 1911, \$113,855, or 81.7 per cent greater; for France, 1910, \$144,683, or 130.9 per cent greater; for the United Kingdom, 1911, \$275,156, or 339.1 per cent greater; and for England and Wales, 1911, \$328,415, or 424.1 per cent greater. In reference to the relation of freight rates to capitalization Mr. Johnson states that uniform rates have no fixed relation to capitalization, owing to the fact that competition necessitates uniform rates whether the capitalization varies or not.

PROGRAM OF ASSOCIATION MEETING

International Street & Interurban Railway Association

The program for the eighteenth biennial convention of the International Street & Interurban Railway Association has just been published. The association will meet this year at Budapest upon invitation of the government of

Hungary and of the city of Budapest. The sessions will begin on Monday, Aug. 31, 1914. The following subjects will be discussed:

I. The relations of the public and the local transportation system, considered under the following heads: (A) The effect of new methods of transportation on the development and extension of large cities and on their social customs. (B) Fares: (1) basis of fares and their influence on traffic; (2) transfers at reduced rates and their influence on earnings; (3) commutation tickets and methods of establishing their price.

Committee: Mr. Duval-Arnould, member of the City Council of Paris, and Dr. Kuhles, member of the City Council of Munich.

II. Corrugation.

Committee: Messrs. Busse, chief engineer of the Grosse Berliner Strassenbahn, and Resal, director of the Compagnie Française des Tramways Electriques et Omnibus, of Bordeaux.

III. Rails and tires, considered under the following heads: (A) The best form of rails and tires to obtain a minimum coefficient of track resistance and minimum wear of tires on curves and the effect of wheel gage on curves. (B) Use of special rails, both as regards shape and composition, for curves.

Committee: Messrs. Bacqueyrisse, chief engineer of the tramways of the Compagnie Générale des Omnibus, Paris, and Minorini, manager Municipal Tramways of Milan.

IV. Ball bearings and roller bearings, their application to motor cars and trail cars.

Committee: Messrs. Largiader, manager of the Municipal Railway of Zurich; Schoerling, chief engineer of the Hanover Tramways, and Tobias, superintendent of shops, Budapest Tramways.

V. Motormen, conductors and inspectors; their methods of instruction and the best method of accounting for the tickets delivered to the conductors and of taking charge of the receipts.

Committee: Messrs. Noirfalise, general manager of the Société Anonyme des Tramways Liegeois, and Roethy, chief inspector Budapest Tramways.

VI. Special methods for transshipping merchandise between narrow-gage lines and standard-gage lines.

Committee: Mr. Sapin, manager of the Central Railway & Tramway Company of Paris and of the tramway companies of Ekaterinoslaw, Russia.

VII. Operation of a railway under different franchises, divisions of the receipts and expenses.

Committee: Mr. Carnevali, chief engineer of the Turin Tramways.

VIII. Steam locomotives for light railway lines: (A) Recent improvements. (B) Covering of wheels and mechanism by casing and a platform at each end of the locomotive. (C) Use of superheat.

Committee on the first two subjects: Mr. Hamelink, formerly manager of the Netherlands Tramways; on the third subject, Mr. de Soignie, manager of the local railways system in Andenne-Namur.

IX. Underground feeders: Specifications; use of aluminum; life.

Committee: Mr. Sekutowicz, operating manager of the Lvovs Railways & Tramways Company.

X. Three-wire distribution for tramways; use of a higher tension in the suburbs than in the center of the city; special arrangements necessary for the rolling stock, switchboard operation and the distribution system.

Committee: Mr. Sieber, manager Nuremberg-Furth Tramways.

XI. Conversion of alternating current to high-tension direct current; use of motor-generators, rotaries, etc.

Committee: Messrs. Dalrymple, general manager Glasgow Corporation Tramways, and Sarrat, chief engineer of the firm of E. L. J. Empain, Brussels.

XII. Facilities for loading passengers: (A) Stop signs, covered stations and refuges, use of additional motor cars and trail cars during rush hours. (B) Destination signs. (C) Publicity and its effect on increasing the gross receipts.

Committee: Rodolphe de Weck, manager of the Fribourg Railways and president of the Swiss Association of Secondary Railways.

Financial and Corporate

Stock and Money Markets

Nov. 5, 1913.

The price advances during the first hour of trading on the New York Stock Exchange to-day were accompanied by a volume of trading considered large as compared with the standards set recently. The sales for the day totaled 225,757 shares. The market as a whole, however, was left at the close of the day a fair fraction above Monday's final average. Rates in the money market to-day were: Call, 3@5 per cent; sixty and ninety days, 4¼@5 per cent; four, five and six months, 4½@5 per cent.

The Philadelphia market moved to-day within a narrow range under very limited transactions. There was a good demand for bonds and prices showed a fractional advance. Trading in the Chicago market to-day was broad, but the volume of transactions was small. Bonds changed little.

Trading in Boston to-day was slightly more active than it has been for some time past, but prices were irregular. The bond market was again broad and active.

The market for stocks in Baltimore to-day was very narrow and the total of sales was small. The demand for bonds continues good, the sales to-day totaling \$51,300, par value.

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

	Oct. 29	Nov. 5
American Brake Shoe & Foundry (common).....	88½	88½
American Brake Shoe & Foundry (preferred).....	128	129½
American Cities Company (common).....	36	36
American Cities Company (preferred).....	62¾	62¾
American Light & Traction Company (common).....	330	328
American Light & Traction Company (preferred).....	105	104½
American Railways Company.....	38¾	38¾
Aurora, Elgin & Chicago Railroad (common).....	46	40
Aurora, Elgin & Chicago Railroad (preferred).....	84	84¾
Boston Elevated Railway.....	85	82½
Boston Suburban Electric Companies (common).....	7	7
Boston Suburban Electric Companies (preferred).....	59	59
Boston & Worcester Electric Companies (common).....	a10	a10
Boston & Worcester Electric Companies (preferred).....	39	39
Brooklyn Rapid Transit Company.....	87¾	86½
Capital Traction Company, Washington.....	115	114¼
Chicago City Railway.....	160	160
Chicago Elevated Railways (common).....	25	25
Chicago Elevated Railways (preferred).....	75	75
Chicago Railways, pteptg., ctf. 1.....	90	a92
Chicago Railways, pteptg., ctf. 2.....	29¼	28½
Chicago Railways pteptg., ctf. 3.....	7¼	7
Chicago Railways, pteptg., ctf. 4.....	2½	2½
Cincinnati Street Railway.....	107½	106
Cleveland Railway.....	103¾	103¼
Cleveland, Southwestern & Columbus Ry. (common).....	*5½	*5½
Cleveland, Southwestern & Columbus Ry. (preferred).....	*30	*30
Columbus Railway & Light Company.....	18	18
Columbus Railway (common).....	a69½	59½
Columbus Railway (preferred).....	88	88
Denver & Northwestern Railway.....	111	111
Detroit United Railway.....	70	a80
General Electric Company.....	140¾	140
Georgia Railway & Electric Company (common).....	119¾	120½
Georgia Railway & Electric Company (preferred).....	85½	85½
Interborough Metropolitan Company (common).....	14	14¾
Interborough Metropolitan Company (preferred).....	58	57¾
International Traction Company (common).....	*40	*40
International Traction Company (preferred).....	95	95
Kansas City Railway & Light Company (common).....	*22	*22
Kansas City Railway & Light Company (preferred).....	*30	*30
Lake Shore Electric Railway (common).....	*7	*7
Lake Shore Electric Railway (1st preferred).....	*92	*92
Lake Shore Electric Railway (2d preferred).....	*25	*25
Manhattan Railway.....	127	128¾
Massachusetts Electric Companies (common).....	11½	11¼
Massachusetts Electric Companies (preferred).....	67	67
Milwaukee Electric Railway & Light Co. (preferred).....	*100	100
Norfolk Railway & Light Company.....	25¼	*25¼
North American Company.....	72	71
Northern Ohio Light & Traction Company (common).....	63½	66¼
Northern Ohio Light & Traction Company (preferred).....	97	97
Philadelphia Company, Pittsburgh (common).....	40	39
Philadelphia Company, Pittsburgh (preferred).....	40¾	39
Philadelphia Rapid Transit Company.....	22¾	23
Portland Railway, Light & Power Company.....	56	*56
Public Service Corporation.....	108	108
Third Avenue Railway, New York.....	40	39¾
Toledo Traction, Light & Power Company (common).....	30	30
Toledo Traction, Light & Power Company (preferred).....	80	80
Twin City Rapid Transit Co., Minneapolis (common).....	104	103¾
Union Traction Company of Indiana (common).....	*13	13
Union Traction Company of Indiana (1st preferred).....	*83	83
Union Traction Company of Indiana (2d preferred).....	*25	25
United Rys. & Electric Company (Baltimore).....	26	25½
United Rys. Inv. Company (common).....	18	18
United Rys. Inv. Company (preferred).....	34½	36½
Virginia Railway & Power Company (common).....	56	a56
Virginia Railway & Power Company (preferred).....	93½	94
Washington Ry. & Electric Company (common).....	93	92
Washington Ry. & Electric Company (preferred).....	88½	89
West End Street Railway, Boston (common).....	70	69
West End Street Railway, Boston (preferred).....	90	a89
Westinghouse Elec. & Mfg. Company.....	66½	66½
Westinghouse Elec. & Mfg. Company (1st preferred).....	110	109

*Last sale. a Asked.

ANNUAL REPORT

Boston Elevated Railway

A summary of the business of the Boston (Mass.) Elevated Railway for the year ended June 30, 1913, follows:

Gross revenue from operation:	
Passenger revenue.....	\$16,268,607
Parlor, chair and special car revenue.....	21,312
Mail revenue.....	37,097
Express rental.....	26,378
Miscellaneous transportation revenue.....	1,695
Station and car privileges.....	212,308
Rent of tracks and terminals.....	65,303
Rent of equipment.....	272
Rent of buildings and other property.....	110,189
Power revenue.....	29,399
Miscellaneous revenue.....	36,349
Total operating revenue.....	\$16,808,909
Operating expenses:	
Maintenance of way and structures.....	\$1,761,843
Maintenance of equipment.....	1,282,656
General expenses.....	1,773,598
Traffic expenses.....	16,084
Transportation expenses.....	6,301,400
Total operating expenses.....	11,135,581
Net operating revenue.....	\$5,673,328
Other income:	
Interest on deposits, etc.....	\$50,419
Interest from securities owned.....	69,460
Interest charged to construction.....	34,141
Miscellaneous.....	5,399
Total other income.....	159,419
Total income.....	\$5,832,747
Deductions from income:	
Payments on account of leased railways:	
Tremont Street subway rental.....	\$211,751
Less amount charged Bay State St. Ry.....	23,683
Interest on funded debt of West End St. Ry. Dividend on preferred stock of West End St. Ry., 8 per cent.....	\$188,068
Dividend on common stock of West End St. Ry., 7 per cent.....	762,610
Dividend on stock of Somerville Horse R.R., 6 per cent.....	512,000
Taxes on West End St. Ry.....	880,969
Interest and taxes on leased property of Bay State St. Ry.....	9,180
Rent of Newtonville & Watertown St. Ry.....	610,218
6,031	50,497
Total.....	\$3,019,573
Interest on funded debt.....	887,806
Interest on unfunded debt.....	207,700
Taxes, Boston Elevated Railway.....	376,462
Tax on earnings.....	141,341
Washington St. Tunnel rental.....	370,256
East Boston Tunnel rental.....	60,574
Cambridge connection rental.....	68,408
Total deductions.....	5,132,124
Balance—net income for period.....	\$700,623
Dividend No. 25, paid Aug. 15, 1912, 3 per cent.....	\$598,500
Dividend No. 26, paid Feb. 15, 1913, 3 per cent.....	598,500
Total.....	1,197,000
Deficit for the year.....	\$496,377

William A. Bancroft, president of the company, says in part:

"During the year the company has increased its capital stock by the issue of 39,294 shares, which were subscribed for at \$105 per share. This was the portion of the 40,000 shares which were authorized by vote of the stockholders on Nov. 4, 1912, and by order of the Board of Railroad Commissioners of Dec. 6, 1912, which were subscribed for. This makes the capital stock outstanding at the close of the fiscal year \$23,879,400. There are 706 shares of stock, unsubscribed for, to be sold at public auction at not less than par.

"During the year the company has also issued \$4,000,000 of 5 per cent gold bonds, dated Dec. 2, 1912, and running for thirty years to Dec. 1, 1942. This makes the funded debt \$22,300,000.

"On July 16, 1913, the board of directors accepted Chapter 777 of the Acts of the Legislature for 1913. This act, in effect, provides that the elevated railway heretofore authorized by law (Chapter 497, Acts of 1907) is not to be built in Malden, nor in Everett beyond a point near the intersection of Broadway and the Eastern Division of the Boston & Maine Railroad. The company by the act is granted a right to build a subway from this point to a point near Malden Square. If the company does not begin to build the subway within five years from the date of the acceptance of the act, the Boston Transit Commission, if requested by the cities of Everett and Malden, may build

such a subway, to be financed by the cities of Everett and Malden, and to be leased to the company for a period of twenty-five years at an annual rental of 4½ per cent on the net cost of the subway.

"On July 16, 1913, the board of directors also accepted Chapter 819 of the Acts of 1913. This act provides for a connection between the Boylston Street subway and the Tremont Street subway at a point near Park Square, and for the operation of both of these subways, so connected, as soon as may be. The Boston Transit Commission, the act further provides, is to investigate and to report to the next General Court whether it is desirable to alter the route of the Boylston Street subway beyond the point of connection with the Tremont Street subway.

"The company has added a net of 3,929 miles of surface track, making a total mileage of 510,988.

"The only new track put into operation during the year was that on Southamptton Street between Andrew Square, South Boston, and Massachusetts Avenue, Roxbury.

"The company has ordered 100 more prepayment cars and fifty-five elevated cars. These, with the twenty Cambridge subway cars, when all are delivered, will make an addition to its rolling stock since last year of 175 large cars. Besides these the company is adapting a number of cars to be used as stepless, prepayment, middle-entrance, vestibuled cars. Of these thirty-two will soon be in operation.

"The construction of the Boylston Street subway, beginning on March 12, 1912, at a point on Massachusetts Avenue near its intersection with Beacon Street, has been prosecuted by the Boston Transit Commission. While incomplete in sections the work has reached nearly to Charles Street on Boylston Street.

"The construction of the Dorchester tunnel, which is to be an extension of the Cambridge subway from Park Street east, was begun by the Boston Transit Commission on May 30, 1912. Work has been done under Winter and Summer Streets as far as the easterly line of Arch Street.

"The commission also began work upon the East Boston tunnel extension on Nov. 29, 1912, near Scollay Square. Much progress has been made.

"It is expected that the Boylston Street Subway, as far as the Public Garden, will be in service in about a year. The use of the tunnels will not be begun until later.

"The company has nearly finished the construction of the Alford Street yard in Charlestown, made necessary on account of the extension of the elevated road to Everett, in accordance with the legislation above recited.

"On Dec. 21, 1912, the new 15,000-kw generator was put into service at the South Boston power station. This makes three units of 15,000 kw each in this station.

"On Dec. 9, 1912, Dover Street station as enlarged was put in service.

"Tentative freight and express business was inaugurated during the year. Cars of the Bay State Street Railway and of the Boston & Worcester Street Railway are run upon our tracks. These companies pay our company for the privilege, so that our company, as such, is not engaged in collecting or delivering parcels.

"The first station was opened on Oct. 28, 1912, at the company's property on Harrison Avenue. The second station, upon land leased by the company at Copps Hill Wharf, was opened Feb. 17, 1913.

"The workingmen's compensation act became law on July 1, 1912. To meet this act several courses were open to the company, but it was deemed expedient to take out a policy in the Massachusetts Employees' Insurance Association—a company created by the State. The cost to the company for the fiscal year ended June 30, 1913, because of the act, was \$82,988. As an additional precaution to prevent accidents and to reduce the burden imposed by the act, safety committees—thirty-seven in all—have been formed from among the employees. There are upward of 200 members, and each carhouse, power house, shop, etc., has its committee.

"Conferences with representatives of the labor organization brought about an agreement as to twenty of the forty-eight demands which were made last April. The others, relating chiefly to wages, have been under arbitration by a board consisting of James J. Storrow, chairman; James L. Richards, representing the company, and James H. Vahey, representing the labor organization.

"From the summary of stockholders of record June 30, 1913, hereinafter printed, it appears that the total number is 5973, holding 238,794 shares of stock. Of these 5346, holding 216,893 shares, live in Massachusetts. This shows that nearly 90 per cent of the stock is held in Massachusetts. The average number of shares held by each stockholder of the company is a little more than thirty-nine shares.

"Our revenue and expenses were substantially affected by the strike, which was not settled till the latter part of July, 1912."

The traffic statistics of the company follow:

Round trips:	
Run by rapid transit passenger cars.....	1,159,056
Run by surface passenger cars.....	5,562,721
Run by U. S. mail cars.....	19,341
Run by express cars.....	3,475
Total.....	6,744,593
Revenue miles:	
Run by rapid transit passenger cars.....	11,385,787
Run by surface passenger cars.....	46,118,784
Run by U. S. mail cars.....	222,376
Run by express cars.....	57,372
Total.....	57,784,319
Revenue car hours:	
By rapid transit passenger cars.....	777,306
By surface passenger cars.....	4,552,094
By U. S. mail cars.....	24,964
By express cars.....	5,343
Total.....	5,359,707
Passengers carried:	
Revenue passengers on rapid transit and surface cars.....	326,352,863
Revenue:	
From revenue passengers on rapid transit and surface cars.....	\$16,268,607
From parlor, chair and special cars.....	21,312
From U. S. mail cars.....	37,097
From express cars.....	26,379
Total revenue from car operation.....	\$16,353,394

American Public Utilities Company, Grand Rapids, Mich.

—The American Public Utilities Company has issued an attractive pamphlet giving the holders of its securities detailed information concerning the operations of the company and the conditions of its various subsidiaries. Each of the twelve subsidiaries taken up is described in full in regard to the character of the service offered, the size and construction of the plant, and the character of the city itself and the surrounding country. The Jackson Light & Traction Company, Jackson, Miss., which operates lighting, power and street railway properties in Jackson, is one of the companies described. The book is well illustrated throughout with halftones of the different properties.

Buffalo & Lake Erie Traction Company, Buffalo, N. Y.

—The continued hearing on the application of the Canadian-American Power Corporation to import 46,000 hp from Niagara Falls, Ont., to supply the Buffalo & Lake Erie Traction Company and the proposed Frontier Electric Railway with energy, scheduled to be held before the Public Service Commission of the Second District of New York on Oct. 31, was adjourned for two weeks at the request of counsel for the majority bondholders of the Buffalo & Lake Erie Traction Company.

Columbus Railway & Light Company, Columbus, Ohio.

—Following a conference attended by G. M. Clark, J. S. Clark and C. S. McMeen, president of the Columbus Railway & Light Company, with representatives of the various railway and lighting companies of the city, the report became current that a settlement will be reached with the stockholders of the Columbus Light, Heat & Power Company by which that company will participate in the reorganization plan. The stockholders of the Columbus Light, Heat & Power Company demanded that they be placed upon the same basis as the stockholders of the Columbus Edison Company, with respect to the reorganization.

Connecticut Company, New Haven, Conn.

—Howard Elliott, chairman of the board of directors of the New York, New Haven & Hartford Railroad, made the following statement on Nov. 6 in regard to the inspection which is being made of the properties of the Connecticut Company: "Engineers from the Stone & Webster organization are making an examination of portions of the electric railway properties in order that Mr. Elliott and the committees of the directors now engaged in making a study of the electric railway problem may have some necessary detailed information. There is nothing in the story that Stone & Webster are to acquire any portion of the electric railway properties. The examination is in line with that just completed by out-

side engineers of the entire signal system of the New Haven and like the examination now being conducted on the Boston & Maine Railroad."

Consolidated Railway & Power Company, Fayetteville, N. C.—Ernest Poindexter, representing Chicago interests, is understood to be negotiating for the purchase of the property of the Consolidated Railway & Power Company, which controls the Fayetteville Street Railway & Power Company and the Little River Power & Transmission Company.

Fort Dodge, Des Moines & Southern Railway, Boone, Ia.—The property of the Fort Dodge, Des Moines & Southern Railway was sold under foreclosure on Oct. 31 for \$3,800,000 to Rollin B. Fisher, acting for the Old Colony Trust Company, Boston, Mass., trustee for the bondholders.

Idaho Traction Company, Boise, Idaho.—The Idaho Traction Company is operating the properties formerly known as the Boise Valley Railway, Boise Railroad and the Boise & Interurban Railroad.

Illinois Traction System, Peoria, Ill.—The directors of the Illinois Traction System have sent out a notice to the stockholders of the company for a meeting for the purpose of considering the purchase of the Western Railways & Light Company. H. E. Chubbuck, vice-president executive of the Illinois Traction System and the Western Railways & Light Company, who is in charge of all the properties operated by both companies, states that the deal is a purchase of the Western Railways & Light Company and not a merger and is primarily for the purpose of economy. The two companies have identical management and the principal stockholders of both are the same. According to Associated Press dispatches from St. Louis the proposed merger is to be accomplished through the purchase of the common stock of the Western Railways & Light Company by issuing one share of Illinois Traction common stock in exchange for two shares of Western Railways & Light Company common stock. The same source of information says that as the amount of common stock issued by the Illinois Traction is \$9,984,900 out of an authorized issue of \$10,000,000 and by the Western Railways & Light Company \$4,521,800, it will be necessary to increase the common stock of the Illinois Traction Company.

Lincoln Railway & Light Company, Lincoln, Ill.—Representatives of the Commercial Club of Lincoln, Ill., who took a nine months' option on the property of the Lincoln Railway & Light Company, have in turn offered the property to a syndicate on thirty days' option.

Newell (W. Va.) Street Railway.—On Sept. 11, 1913, The Newell Street Railway, a corporation organized under the laws of the State of Ohio and the owner of a street railway in East Liverpool, Ohio, and the Newell Street Railway, a corporation organized under the laws of West Virginia but permitted to do business in Ohio, filed a joint petition praying for the consent and approval of the Public Utilities Commission of Ohio to the leasing by the Newell Street Railway of all of the property of The Newell Street Railway. On Oct. 22, 1913, the commission assented to this lease by the West Virginia corporation.

Oklahoma Railway, Oklahoma City, Okla.—Announcement has been made by John W. Shartel, vice-president of the Oklahoma Railway, of the purchase by that company of the property of the Oklahoma Traction Company. In referring to the purchase the *Oklahoman* said: "The deal means the absorption of all street car trackage and transportation by the Classen interests except 5½ miles of track owned by the Capitol Traction Company, extending from Sixteenth Street and Robinson Avenue to Northeast Park."

Public Service Investment Company, Boston, Mass.—The stockholders of the Public Service Investment Company have approved an increase in the authorized stock of 10,000 shares each of preferred and common, making total authorized capital \$6,000,000, half common and half preferred.

Springfield (Ohio) Railway.—At the annual meeting of the stockholders and directors of this company, held on Oct. 29, Paul C. Martin was elected president to succeed his father, the late Oscar T. Martin. The other officers elected are all Philadelphia men, as follows: C. L. S. Tingley, first vice-president; H. J. Crowley, second vice-president; F. J. Pryor, secretary; W. W. Perkins, treasurer.

Toledo Traction, Light & Power Company, Toledo, Ohio.—Harris, Forbes & Company, New York, N. Y., have purchased \$289,000 of first lien 5 per cent five-year bonds of the Toledo Traction, Light & Power Company, being 75 per cent of the amount expended for new equipment for the railway and lighting properties. This makes the total amount of the issue now outstanding \$6,287,000.

Union Traction Company of Indiana, Anderson, Ind.—Judge Orbison of the Superior Court of Indianapolis has sustained the demurrer of the defendant and dismissed the suit brought by Miss Alice Norton, Cambridge, Mass., who sought to have set aside the merger of the Indiana Union Traction Company and the Union Traction Company of Indiana, perfected in May, 1912.

Winnipeg (Man.) Electric Railway.—The Winnipeg Electric Railway has bought the franchise and charters of the Manitoba Power Company, Rural Railways and the Winnipeg River Railway.

Dividends Declared

Connecticut Railway & Lighting Company, Bridgeport, Conn., quarterly, 1 per cent, preferred; quarterly, 1 per cent, common.

Massachusetts Consolidated Railways, Greenfield, Mass., quarterly, 1¼ per cent, preferred.

Ohio Traction Company, Cincinnati, Ohio, quarterly, 1¼ per cent, preferred.

Pensacola (Fla.) Electric Company, 3 per cent, preferred.

Tampa (Fla.) Electric Company, quarterly, 2½ per cent.

ELECTRIC RAILWAY MONTHLY EARNINGS

ATLANTIC SHORE RAILWAY, SANFORD, MAINE						
Period		Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1 mo.	Sept. '13	\$33,077	\$24,992	\$8,085	\$654	\$7,431
1 "	" '12	33,734	22,957	12,777	466	12,311
JACKSONVILLE (FLA.) TRACTION COMPANY						
1 mo.	Aug. '13	\$55,255	*\$34,537	\$20,718	\$12,976	\$7,742
1 "	" '12	48,856	*33,471	15,385	9,934	5,451
12 "	" '13	607,296	*403,451	203,845	133,202	70,643
12 "	" '12	588,981	*373,610	215,371	114,147	101,224
MONONGAHELA VALLEY TRACTION COMPANY, FAIRMONT, W. VA.						
1 mo.	Sept. '13	\$50,814	\$33,985	\$56,829	\$25,548	\$31,281
1 "	" '12	83,786	30,063	53,724	24,738	28,986
9 "	" '13	701,438	246,265	455,174	220,293	234,881
9 "	" '12	627,613	250,750	376,863	186,118	190,045
NEW ORLEANS RAILWAY & LIGHT COMPANY, NEW ORLEANS, LA.						
1 mo.	Sept. '13	\$538,360	\$288,766	\$249,594	\$206,634	\$42,960
1 "	" '12	512,646	274,498	238,148	188,198	49,950
9 "	" '13	5,082,655	2,691,622	2,391,033	1,822,914	568,119
9 "	" '12	4,878,981	2,559,039	2,319,942	1,666,730	453,212
NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEX.						
1 mo.	Aug. '13	\$185,886	*\$105,137	\$80,748	\$24,166	\$56,582
1 "	" '12	147,203	*78,834	68,370	20,858	47,512
12 "	" '13	2,078,037	*1,116,554	961,483	289,769	671,714
12 "	" '12	1,669,796	*904,471	765,325	250,736	514,589
PADUCAH TRACTION & LIGHT COMPANY, PADUCAH, KY.						
1 mo.	Aug. '13	\$26,312	*\$16,325	\$9,988	\$7,583	\$2,405
1 "	" '12	23,954	*15,619	8,335	7,195	1,140
12 "	" '13	290,675	*193,059	97,616	88,733	8,883
12 "	" '12	279,833	*184,101	95,733	85,443	10,290
PENSACOLA (FLA.) ELECTRIC COMPANY						
1 mo.	Aug. '13	\$24,953	*\$15,470	\$9,483	\$7,055	\$2,428
1 "	" '12	25,905	*15,015	10,890	6,377	4,512
12 "	" '13	285,936	*181,988	103,048	77,819	25,229
12 "	" '12	287,450	*178,010	109,440	72,431	37,009
PUGET SOUND TRACTION, LIGHT & POWER COMPANY, SEATTLE, WASH.						
1 mo.	Aug. '13	\$723,529	*\$410,022	\$313,507	\$174,427	\$139,081
1 "	" '12	680,206	*402,668	277,537	164,809	112,728
12 "	" '13	8,444,058	*4,910,483	3,533,575	2,045,015	1,488,560
12 "	" '12
SAVANNAH (GA.) ELECTRIC COMPANY						
1 mo.	Aug. '13	\$70,985	*\$46,311	\$24,674	\$22,800	\$1,874
1 "	" '12	64,073	*47,616	16,457	16,153	304
12 "	" '13	803,661	*558,688	244,973	237,639	7,334
12 "	" '12	732,185	*540,966	191,219	189,887	1,332
TAMPA (FLA.) ELECTRIC COMPANY						
1 mo.	Aug. '13	\$71,624	*\$39,665	\$31,959	\$4,354	\$27,605
1 "	" '12	62,981	*32,717	30,264	4,534	25,730
12 "	" '13	796,303	*427,875	368,429	55,126	313,303
12 "	" '12	739,140	*390,898	348,242	53,973	294,269

*Includes taxes.

Traffic and Transportation

Opinion of New Jersey Commission Regarding Height of Car Step

Brief reference was made in the *ELECTRIC RAILWAY JOURNAL* of Nov. 1 to the order of the Board of Public Utility Commissioners of New Jersey to the effect that "no new cars for the transportation of passengers on the lines operated by the Public Service Railway shall be placed in service and operated by said company with an initial step exceeding 15 in. in height and a second step exceeding 14 in. in height." The opinion on which the order is based was concluded in part as follows:

"The whole question practically resolves itself into a matter of the feasibility and cost of reducing the height of car steps upon the respondent's equipment.

"The evidence before us suffices to show that a reduction in the height of car steps by means of the substitution of maximum traction trucks is not practicable.

"We accept respondent's contention that the four-motor equipment is best contrived to negotiate at proper speed the grades upon respondent's lines. We accept the evidence before us tendered to show that an additional step for entrance upon or exit from respondent's cars would not be desirable.

"Petitioner's witness, Clifton W. Wilder, agrees with the respondent that more than three steps or stages are a nuisance. A third step would lessen the standing room on the platform, would involve another distinct movement on the part of the passenger, would probably dangerously lessen the area of the treads and would impede rapidity of loading and unloading.

"We are not satisfied that a folding step would at present be feasible. Such a step could not, in certain places, protrude beyond the side of the car. It would have to be so devised as to divide the controlling distance of practically 41 in. and would consequently involve the same essential objections as attached to the third step mentioned above. We are satisfied from the evidence before us that a 33-in. wheel is required upon the respondent's ordinary four-motor truck equipment, and that the requisite clearance below and above the motor casing, together with the members of the car body and superstructure resting on the truck, make necessary a distance of not over 41 in. from the top of the running rail to the floor of the car. We are not satisfied that this distance of 41 in. is properly divided as at present by the company into steps of approximately 17 in., 14 in. and 10 in. when the car is newly constructed.

"On the other hand, we are satisfied by the testimony of the board's engineer, Winslow B. Ingham, and by the confirmation thereof of H. A. Benedict, the company's mechanical engineer, in charge of rolling stock and equipment, that it is practicable, without extra cost, when cars are in process of construction, to bend the knees supporting the platform so that the entire platform shall be lowered at least 2 in. from its present height, retain the present distance from the step to the platform, to wit, 14 in., and reduce the height of the lower step to 15 in. from the head of rail when the cars are new.

"On the same testimony and confirmation thereof by H. A. Benedict, we are satisfied that a 1-in. ramp, such as proposed by Mr. Ingham, running from the king bolt to the end of the car floor will provide satisfactorily a practicable step not over 11 in. in height from the car platform to the floor of the car. This would make the second step not over 14 in. in height.

"Upon this plan of construction for the future, the evidence is so clear and is so completely corroborated by the respondent's witness, Mr. Benedict, that we have no hesitation in ordering that hereafter the company shall install and employ no new equipment with an initial step to exceed 15 in. in height.

"The need of issuing an order of this tenor forthwith without waiting further evidence desired by the board as to extant equipment is apparent. It will prevent the augmentation of equipment not properly designed to afford the maximum of comfort and rapidity in the work of loading and unloading.

"The board, therefore, finds and determines in view of the

attested feasibility of designing cars with an initial step not higher than 15 in. from the running rail, when the car is new, that the Public Service Railway in putting into operation additional equipment with an initial step higher than 15 in. and a second step higher than 14 in., will fail to furnish safe, proper and adequate service; and, except as otherwise indicated, the board will require of the Public Service Railway in order to furnish safe, proper and adequate service and to keep and maintain its property and equipment used in passenger service in such condition as to enable it to do so, to operate hereafter new equipment used in passenger service only when such new equipment shall be provided with an initial step not in excess of 15 in. in height and a second step not in excess of 14 in. in height.

"Before making an order reducing the height of steps on extant equipment, the board feels the need of some additional evidence. First of all, it will require of the company to classify the 245 cars unlisted with reference to the height of the first step, so that the height of the first step on these 245 cars may be known. Second, it will require of the company, and it will seek to obtain from outside experts, additional evidence of the cost of reconstruction necessary to lower the height of the initial step of the existing equipment.

"If, as suggested by the company, but not specifically pointed out by it, there exists any exceptional case where an initial step higher than 15 in. is required because of territory traversed or peculiar conditions under which the cars are operated, an opportunity will be given the company in the supplementary hearing to adduce evidence on these matters."

Conscience Money Letter

A letter was received recently by A. F. Elkins, auditor Columbus, Delaware & Marion Railway, inclosing a postal order made payable to him for 40 cents conscience money. The letter read as follows:

"To the C. D. & M. Co.

"By peculiar circumstances, the C. D. & M. Co. were cheated out of the price of one passenger fare, \$.40, between Cols. and Del. in Aug., 1912.

"It seems strange that such a long time should pass by before those who did the defrauding should realize that they were so shamefully guilty of theft, and rectify the error. As tickets are sold to strangers continually by the C. D. & M. it is not necessary to disclose this passenger name. But the guilty party is very anxious to right this error, not alone for the sake of the C. D. & M., but much more to acknowledge and rectify the error—for their own guilty sake in the face of the fact that they desire to stand for absolute honesty and uprightness.

"Boarding the car in Columbus with a properly purchased ticket, at the C. D. & M. station, this passenger offered his ticket to the conductor who came thru the car. But the conductor was evidently not taking tickets for he refused the ticket and went about fixing the windows as the car stood by the station. Later the car was stalled, half way out of the city by a car disabled ahead, the car filled up till it was crowded in every aisle and corner and platform, and confusion generally reigned for some little while. Then the conductor came for the tickets and this passenger with the only half complete memory of having once handed the conductor his fare, innocently and conscientiously said, 'I have paid my fare.' And the fact of his mistake did not occur to him at all, nor did he think of the circumstances again, until much to his surprise he found his ticket in his purse after reaching home.

"Oh the *shame* of this rest!!! He had the ticket now in his possession and he thought it could be used. And as he was not himself going to Cols. he gave it to a friend who often made the trip. And he used it.

"Passes and free tickets may be issued by the Co. and used by persons who have not paid for them, but that has no concern with this affair. That passenger should have destroyed the ticket on finding it, as it had been used. It is horrible to realize how long it has taken for this person to see his guilt, to the extent of \$.40 indebtedness to the C. D. & M. for a passenger trip never paid for. He must answer to God for the theft, and watch vigilantly for honesty in himself henceforth."

Near-Side Stops in Paducah.—The Paducah (Ky.) Traction Company has adopted the plan of stopping on the "near" side of the street. The change was put into effect on Oct. 27.

Milwaukee Mayor Dedicates New Cross-Town Line.—Mayor Bading of Milwaukee, Wis., dedicated on Oct. 21 the new Twenty-seventh Street cross-town line and the Sixth Street route of the Eighth Street-Muskego Avenue line.

Fatal Wreck in Indiana.—One man was killed and many persons were injured on Oct. 23, when an eastbound Indiana Union Traction car left the track and upset at a curve just west of Yorktown, a village 6 miles west of Muncie.

Albany Southern Changes Rates.—The Albany Southern Railway, Hudson, N. Y., has filed with the Public Service Commission, Second District, State of New York, changes in local commutation fares from Albany to certain stations.

B. R. T. Employees Entertain.—The first monthly entertainment of the season given under the auspices of the Brooklyn Rapid Transit Employees' Benefit Association was held at its clubhouse, Jamaica and Alabama Avenues, on Oct. 30, with over 900 persons in attendance.

Express Service in Discontinued Interurban Cars.—It is understood that the Wells Fargo & Company express will be brought to Tonawanda and North Tonawanda from Buffalo, N. Y., on interurban cars after the discontinuance of passenger train service on the Niagara Falls branch after Nov. 15. Express from Lockport is now transferred from train to trolley at Tonawanda. This arrangement has been in effect since the Lockport branch of the Erie Railway was electrified by the International Railway Company, of Buffalo.

Improving Montreal Service.—The construction of lines and the improvement of the permanent way have resulted in bettering the service of the Montreal (Que.) Tramways. This relates mainly to the central district and the City Council is desirous of securing better accommodation in the outer wards. At an informal conference between the Council and the comptrollers the latter were asked to report on the extension of the service of the company and on the opening of new routes to meet the demands of the outside wards.

Re-routing in Los Angeles.—The first step in the plan for through routing the cars of the Los Angeles (Cal.) Railway, in order to relieve congestion in the downtown districts of the city, was taken on Oct. 27 when the schedule approved by the Board of Public Utilities of Los Angeles some weeks ago was put into effect. An additional change will be made in January, when the proposed curve at First and Spring Streets is constructed and the Temple Street line is brought downtown and connected with the new West Sixth Street line.

Hallowe'en Pranks in Kansas City.—Despite the efforts of the Metropolitan Street Railway, Kansas City, Mo., backed by the police, the usual number of tricks were played on Hallowe'en. A dozen bricks were placed on the tracks at Twenty-fifth Street and Grand Avenue. Fortunately, they failed to stop or derail the cars. One individual threw a stone through a window of a car on the Swope Park line. The track was greased in several places and it was found necessary to have men sand the rails to prevent accidents. A favorite trick seemed to be to stretch wires across the streets so as to throw the trolleys off the wire.

Complaint Regarding Unloading of Near-Side Cars.—Complaint has been made to the Public Service Commission of the Second District of New York against the new order of the International Railway, Buffalo, N. Y., with reference to the unloading of passengers from the near-side cars. Formerly at down-town stops and transfer points and at the end of the line both entrance and exit doors were opened to allow speedier exit to the passengers, this practice being in force particularly in the morning and late afternoon. Notice of the complaint has been sent to the company and the matter will be taken up by the officials with the commission before a hearing is held.

Dismissal of Complaint Against Pacific Electric Railway.—The Railroad Commission of California has dismissed the complaint by the Long Beach Chamber of Commerce against the Pacific Electric Railway alleging unjust rates and inadequate service on the part of this company within the city limits of Long Beach; also that the defendant refuses to issue transfers and to pave the streets adjacent to its tracks as required. The Railroad Commission held, as ground for dismissing the complaint, that the charter of the city of Long Beach invests the power of control over its utilities in the city itself, the commission having no jurisdiction therein.

Traction Line Rates Held Unreasonable.—Declaring that "no rate can be said in its final analysis to be reasonable unless it is clearly not in excess of the service," certain citizens filed a brief Oct. 25 with the Interstate Commerce Commission against the Washington & Old Dominion Railroad. This case is the outcome of new rates put in effect by the railroad in September, 1912, and the complainants are asking the commission to readjust them. The inability of the carrier to make a profit with a reasonable rate, the brief contends, is the misfortune of the carrier, and the public cannot be amerced in order that profit shall be made by the carrier and dividends paid.

Benefit Association Organized by Employees of Missouri Road.—The Kansas City, Clay County & St. Joseph Railway Company Mutual Benefit Association has been formed by employees of that road. According to the by-laws, the association will be composed of "white male employees of the company, or the successors thereof, or other companies which may be controlled in its interest." Membership in the association will cease with the date at which employment with the company terminates. J. R. Harrigan, president, and other officers assisted in the formation of the organization and will take an active interest in it. The dues are 40 cents a month, and the road itself pays \$1 every three months for every member in good standing. Sick and death benefits are provided.

Fare Between Oakland and Ashland Reduced.—The Railroad Commission of California has ordered the monthly commutation rate between Oakland and Ashland, which lies between San Leandro and Hayward, reduced from \$4.50 to \$3.75. The case came before the commission on the complaint of J. P. Ramos against the San Francisco-Oakland Terminal Railways. The complaint asked that the present \$4.50 rate, which is identical with the rate to Hayward, be reduced to \$3, which is the rate between Oakland and San Leandro. The commission held that it would be inequitable to blanket the San Leandro rate as far as Ashland, and held also that the practice of requiring passengers to Ashland to pay the same commutation fare as the passengers to Hayward was also inequitable. The rates become effective in thirty days.

Hearing in New York in Regard to Abandonment of Line.—The Public Service Commission of the Second District of New York held a hearing in Batavia recently in regard to the abandonment of the Buffalo & Williamsville Electric Railway, Williamsville, N. Y., into the city of Batavia. Loran L. Lewis, president of the company, and Godfrey Morgan, secretary, expressed their desire at the meeting to sell the road for the net value of the equipment, but refused the offer of Mayor Wiard of Batavia of \$1 for the line free from all encumbrances. If the company fails to sell the road soon another hearing will be held before the commission and the company will have to await the decision of the commission on the application to abandon the line. There is indebtedness of \$127,500 against the company, of which amount \$117,000 was incurred in building the line into Batavia and \$10,500 in extending the Williamsville line to the Transit road. There are also \$39,347 in notes outstanding.

Results of Illinois Traction System's Slogan Contest.—Prior to the opening of the Illinois State Fair at Springfield, Ill., in October, the Illinois Traction System offered a series of prizes to patrons making a round trip to the State Fair by its lines for the best slogan containing three words the initials of which would be I. T. S. More than 300 suggestions were made by the patrons of the company's lines. At the close of the State Fair judges were appointed to award the honors. The first prize, \$25, was

divided among five persons who offered the same phrase, namely, "Ideal Train Service." The second prize, \$15, was divided among four contestants who offered the phrase "It's Time Saved," and the third prize, \$10, was divided among three contestants who submitted the phrase "It's the System." The contest was widely advertised through the local papers in the cities served by the Illinois Traction System, and much interest attached to the results of the contest. The prize awards were also published in all the local newspapers.

Lockport Resumes One-Man Street-Car Service.—After a two-days' tie-up, street car service in Lockport, N. Y., was resumed on Nov. 3 by the International Railway. The company had withdrawn its cars from the streets upon receiving a notice from the Common Council of Lockport that two men instead of one must be placed in charge of the near-side cars recently put in operation in Lockport, or else the company would be forced to pay a penalty of \$25 for each day every car was operated without two men. The International Railway at once withdrew its service and the company's attorney secured an injunction which was served on the Mayor, Chief of Police, City Clerk and Aldermen restraining them from interfering with the operation of the one-man cars. This injunction enabled the company to resume its service with one man performing the duties of motorman and conductor. Superintendent J. W. Andrews of the Lockport traction lines says that since one man has been taken off the near-side cars the service has been increased and that the public has benefited by the change. Lockport merchants and individuals favor the frequent service with one man on each car.

Progress of Ontario Safety League.—The Ontario Safety League, which aims to teach the public in general and school children in particular how to avoid being hurt in street accidents, is gradually taking shape. A meeting was held recently at the City Hall, Toronto, Ont., with sixteen persons present, at which a constitution was adopted, standing committees were appointed and fees of membership fixed. The question of appointing a secretary at \$1,800 a year was left over for further consideration, the name of J. F. H. Wyse being recommended. James L. Hughes was elected president, and Sir John Gibson was chosen honorary president. It was decided to have an executive committee consisting of the president, vice-president, chairmen of the three standing committees and one representative each from the Ontario Railway Board, the City Council, Board of Education and Separate School Board. There will also be an advisory council, composed of nominees of the various public bodies to be connected with the league. This council may be called for conference purposes by the executive. The annual fee for ordinary members of the league was fixed at 25 cents, and the fee for patrons is to be a minimum of \$5. "Safety First" buttons will be sold at cost to members of all classes.

"The Red Car of Empire."—A tribute is paid to the Pacific Electric Railway by Rufus Steele in a descriptive article entitled "The Red Car of Empire," which appeared in the *Sunset Magazine* for October. The following sample day's program was outlined to the author by a shoe merchant and orange grower living 12 miles outside Los Angeles: "I got out of my outdoor bed at 6, thrust my feet into slippers and went in my pajamas to get the morning paper that was caught in the rose tree by the front gate—the same rose tree in which at this season the male mocker sings all night to his nesting mate. Milk and cream were at the gate and also a parcel of merchandise ordered the afternoon before. At 7:30 I got up from the breakfast table and left home for business. At 8 my eldest daughter left to go to the art institute. At 8:30 the two kids departed for their grammar school 3 miles away. At 9 my wife received a note in the mail that made her wish to do a little shopping, and she came in to the heart of the city. She got home in time to prepare lunch for three ladies who didn't start out to our place until after 11. In the afternoon all of them ran over to a swimming tank 15 miles away. When I got home from the store the whole family was on the tennis court and we had a lively hour before dinner. . . . A red interurban electric car seems always to be waiting at the door when you want to go anywhere, and it gets you there and back in no time."

Personal Mention

Mr. N. W. Patterson has been appointed chief inspector of the Regina (Sask.) Municipal Railway.

Mr. W. H. Rupp has been appointed chief engineer of the Sumpter Valley Railway, Baker, Ore.

Mr. T. W. Ralph, associated with the Canadian Northern Railway, has been appointed auditor of the Chatham, Wallaceburg & Lake Erie Railway Company, Chatham, Ont.

Mr. N. I. Garrison, auditor of the Western States Gas & Electric Company at Stockton, Cal., has been appointed auditor for the Fort Smith Light & Traction Company, Fort Smith, Ark.

Mr. W. E. Sexton, formerly in charge of the Kaw River power station of the Metropolitan Street Railway, Kansas City, Mo., has been appointed chief engineer of the water and light department of Kansas City, Kan.

Mr. W. C. Sharp has resigned as general superintendent of the Helena Light & Railway Company, Helena, Mont. Mr. Sharp was formerly electrical superintendent of the Eastern Pennsylvania Railways, Pottsville, Pa.

Mr. W. C. Callaghan has been appointed general superintendent of the Helena Light & Railway Company, Helena, Mont., as successor to Mr. W. C. Sharp, resigned. Mr. Callaghan was formerly superintendent of transportation of the city lines of the New York State Railways (Rochester Lines).

Mr. Charles E. Mann, until recently clerk of the Massachusetts Railroad Commission and acting secretary of its successor, the Massachusetts Public Service Commission, has been appointed executive secretary of the board and will take charge of the records of the commission's proceedings and have the custody of the documents belonging to that body.

Mr. Andrew A. Highlands has been appointed secretary of the Massachusetts Public Service Commission, with headquarters at 20 Beacon Street, Boston. Mr. Highlands is a native of Fall River, Mass., and was graduated from the Harvard Law School in 1898. He will have general charge of the correspondence and office work of the Public Service Commission.

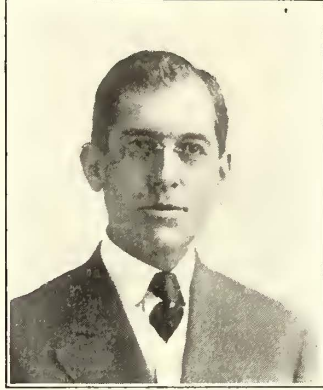
Mr. A. Norman, formerly manager of the Freeport Railway & Light Company, Freeport, Ill., has been appointed manager of the Eugene division of the Oregon Power Company with headquarters at Eugene, Ore., effective on Nov. 15. In this capacity he succeeds Mr. R. M. Jennings, who becomes manager of the Oregon Power Company at Marshfield, Ore.

Mr. H. C. Hoagland has been appointed general manager and treasurer of the Fort Smith Light & Traction Company, Fort Smith, Ark., vice Mr. J. W. Gillette, resigned. Mr. Hoagland will also retain his position as general manager of the Muskogee Gas & Electric Company, Muskogee, Okla. In 1886 Mr. Hoagland entered the employ of the Thomson-Houston Company. He has been connected with public utility companies continuously since then. He was formerly chief electrical and mechanical engineer of the Illinois Traction System.

Mr. Thomas Fitzgerald, for some years assistant general manager of the Cincinnati (Ohio) Traction Company, has been promoted to the position of general manager. In this office he succeeds Mr. Dana Stevens, who has been both vice-president and general manager of the Cincinnati property. Mr. Stevens continues in his official connection as vice-president, but becomes actively identified with the operation of the Cincinnati Car Company as vice-president. Mr. Stevens is also vice-president of the Ohio Electric Railway, and the promotion of Mr. Fitzgerald was made on account of Mr. Stevens' increased duties as vice-president of these several companies. Mr. Fitzgerald, the new general manager of the Cincinnati Traction Company, was graduated from Johns Hopkins University in 1898. His first position was as an apprentice in the shops of the Baltimore & Ohio Railroad. On leaving this position he successively held positions as inspector with the Third Avenue Railroad, New York; wireman with the Sprague

Electric Company; superintendent of the Fairmont & Clarksburg Electric Railway & Light Company, Fairmont, W. Va.; general superintendent of the Norfolk, Portsmouth & Newport News Company, and general manager of the Lexington (Ky.) Railway. He resigned from the last-named position to become assistant to Vice-president Stevens of the Cincinnati Traction Company.

Mr. C. V. Wood, who has been traffic manager of the Springfield (Mass.) Street Railway, general freight and passenger agent of the Interstate Consolidated Street Railway, North Attleboro, Mass., and traffic manager of the Attleboro Branch Railroad, has been elected vice-president in charge of the operating and traffic departments of the Worcester (Mass.) Consolidated Street Railway, Springfield Street Railway, Milford, Attleboro & Woonsocket Street Railway, Interstate Consolidated Street Railway and the Attleboro Branch Railroad. Mr. Wood was born at Woodstock, Vt., on June 8, 1863. He was graduated from the Woodstock high school in 1881 and entered railway service in that year



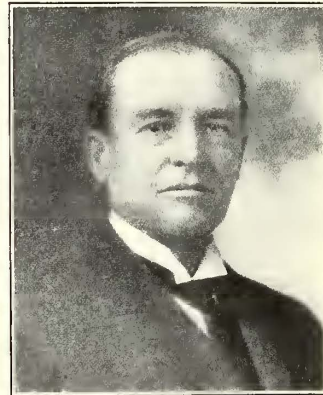
C. V. Wood

as telegraph operator with the Grand Trunk Railway. From March 22, 1882, to March 16, 1886, he was freight cashier, agent and yard master at various points on the New York & New England Railroad. From Jan. 16, 1888, to Oct. 1, 1897, he was passenger agent of the Pittsburgh & Lake Erie Railroad at Pittsburgh, Pa. From Oct. 1, 1897, to July 5, 1899, he was chief clerk to the general manager of the Bessemer & Lake Erie Railroad at Pittsburgh, Pa. From July 5, 1899, to Oct. 1, 1902, he was general manager of the electric freight line at Pittsburgh, Pa. From Oct. 1, 1902, to June 1, 1905, he was superintendent of the West Side Belt Road at Pittsburgh. From June 1 to Sept. 25, 1905, he was superintendent of terminals of the Wabash Pittsburgh Terminal Railway at Pittsburgh. He next became superintendent of the Pittsburgh and the Cleveland divisions of the Wheeling & Lake Erie Railroad, the Pittsburgh Terminal Railway and the West Side Belt Railroad at Canton, Ohio. Up to 1905 Mr. Wood's work had with one exception been all in the steam railroad field. About 1900 he retired from steam railroad work temporarily at the request of Judge James H. Reed, president of the Philadelphia Company, to develop freight traffic on the Pittsburgh Railways, Pittsburgh, Pa. In 1905 Mr. Wood resigned from the Wabash Lines to become connected with various electric railways in Springfield, Mass., and vicinity for the purpose of organizing and developing the passenger and freight traffic. Mr. Wood has accomplished a great work in this field not only in the cities but in the rural districts in which the companies with which he is connected operate. The Springfield Street Railway and the Worcester Consolidated Street Railway control all the lines in Springfield and Worcester respectively. The systems embrace over 500 miles of track and operate more than 1000 cars.

Mr. Thomas W. Ryley has resigned as superintendent of the Norwich & Westerly Traction Company, Norwich, Conn. Mr. Ryley has been connected with the Groton & Stonington Street Railway, now part of the system of the Norwich & Westerly Traction Company, ever since ground was broken for the construction of the road. He was first employed ten years ago on the survey, and when the road was opened between Groton and Westerly he became a conductor and later a motorman on the new line. He was also employed in the office of the company at Mystic. At the end of two years he was made superintendent of the road, a position which he held for eight years. When the Groton & Stonington Street Railway was taken over by the Norwich & Westerly Traction Company Mr. Ryley was promoted to the position of superintendent of transportation of all the lines under the control of the Norwich & Westerly Company. The duties of superintendent of equipment were the next to devolve upon him.

Mr. Henry A. Blair, chairman of the board of directors of the Chicago (Ill.) Railways, has been elected president of the company to succeed Mr. John M. Roach, resigned. Mr. Blair was born at Michigan City, Ind., in July, 1852. He was educated at Williston Seminary, Easthampton, Mass. He began his business career in the Merchants' National Bank, Chicago, of which his father was founder. Subsequently he was elected vice-president of the bank, continuing in that capacity until 1902, when the bank was consolidated with the Corn Exchange National Bank. Mr. Blair is vice-president of the Illinois Trust & Savings Bank, director of the Union Trust Company, Calumet & Chicago Canal & Dock Company, Elgin National Watch Company and the Commonwealth Edison Company. Mr. Blair's active connection with the railways of Chicago dated from his appointment as the receiver of one of the constituent properties of the present Chicago Railways. It is stated unofficially that under the plan for the unified operation of the Chicago Railways and the Chicago City Railway Mr. Blair will be chairman of the board of control and Mr. Leonard A. Busby, now president of the Chicago City Railway, will be president in charge of operation subject to the approval of the full board. As previously stated in the *ELECTRIC RAILWAY JOURNAL*, it is proposed under the plan for unified operation to place the two properties in the control of a board to consist of seven representatives, four of whom will be appointed in the interest of the Chicago Railways and three of whom will be appointed in the interest of the Chicago City Railway.

Mr. John M. Roach has resigned as president of the Chicago (Ill.) Railways, but at the request of the board of directors he will remain a director and continue active



J. M. Roach

connection with the company in the capacity of adviser to the management. Mr. Roach was born in 1852 in Jackson County, Ohio, and was educated at Beverly and Athens, Ohio. Mr. Roach's parents removed to DeKalb, Ill., when he was ten years old. Five years later they returned to Ohio and Mr. Roach entered college at Beverly, where he spent two years. He then went to Helena, Mont., where he did newspaper work and became interested in mining. He traveled thence on horseback to Walla Walla, Wash., Portland, Ore., and down the Pacific Coast to Los Angeles, from which point he turned east to Salt Lake City. He continued east from Salt Lake to Chicago and entered the service of the North Chicago Street Railway in 1872 as a conductor. He advanced rapidly in the service, and was in succession appointed cashier and purchasing agent, and also served in various other capacities through successive changes in the management. In 1887 he was appointed assistant superintendent and in 1890 superintendent. In 1893 came his appointment as second vice-president and general manager, and in 1897 he was appointed to the position of general manager of the West Chicago Street Railway, in addition to the other positions which he held, and thus had his jurisdiction extended over the entire system of street railways in Chicago then owned and controlled by the late Charles T. Yerkes. In 1897 Mr. Roach was elected president of the Cicero & Proviso Street Railway and the Suburban Railroad in addition to the positions which he held previously, and on July 1, 1899, when the Chicago Union Traction Company assumed control of the North Chicago and West Chicago lines he was made vice-president and general manager of the entire system embraced in the Chicago Union Traction Company. After the purchase by the Chicago Union Traction Company in May, 1900, of the Chicago Consolidated Traction Company, Mr. Roach was elected president and general manager, succeeding Charles T. Yerkes. From May, 1900, to 1908 Mr. Roach served as president of the Chicago Union Traction Company, in addition to performing the duties of general manager of the

Chicago Consolidated Company, in which position he succeeded Mr. Jesse Spaulding. When the Union Traction Company was reorganized in 1908 as the Chicago Railways Mr. Roach was elected president and general manager of the company. In 1912 Mr. Roach relinquished the duties of general manager to Mr. Williston Fish.

Mr. C. Nesbitt Duffy has resigned as vice-president and comptroller of The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., to become vice-president and general manager of the Manila Electric Railroad & Light Company, Manila, P. I. The promotion of Mr. Duffy is a recognition of his wide general knowledge of the industry and his experience and ability as an administrative official. What is more noteworthy in these times, it is a recognition of the sound principles of enlightened public policy for which Mr. Duffy stands. An accountant in his early days, Mr. Duffy has grown as the industry has developed. In the great changes of the last few years he has been



C. N. Duffy

one of the leaders in helping to give proper direction to the thought of the industry and the methods of public service corporations so that the important problems of public relation should be settled satisfactorily. He has advocated an attitude of publicity and of frank discussion of problems to the end that the public might become more familiar with the gravity of the issues confronting operating managers. He has practised his doctrine of cultivating the public and has tried to show that the utility company, like every other business, is an organization struggling against handicaps, but that its particular problems are a little more serious than those of most other forms of industry. It is primarily his work along lines of this character that brought Mr. Duffy the well-earned promotion to the office he is now to take. Apart from his activities in the American Electric Railway Association and his regular duties in the Milwaukee system his connection with two other important movements involving large issues contributed to his understanding and interpretation of present problems. One was his leading part in the preparation of the case of the company in the fare suit and the other was his position as a member of the board of arbitration in Cleveland this year when issues between the company and the city were settled. These helped to equip him still more effectively. In his new work Mr. Duffy will find large opportunities for the use of the abilities which he has developed, and in spite of the great distance of his new home he will still keep many warm friendships and will have the same personal interest in the local issues with which he has concerned himself for so many years. Mr. Duffy expects to leave Milwaukee about Nov. 15 for St. Louis and will go from there to San Francisco, from where he will sail on the *Manchuria* on Nov. 27. He is due to arrive in Manila on Christmas Day. Mr. Duffy entered the Milwaukee Electric Railway & Light Company as comptroller on Oct. 1, 1906, succeeding Mr. H. C. Mackay. In May, 1912, he was elected a vice-president of the company in addition to the position of comptroller. Mr. J. D. Mortimer, president of the Milwaukee Electric Railway & Light Company, in announcing the plans of Mr. Duffy, said: "The opportunity presented to Mr. Duffy in his new position as vice-president and general manager of the Manila Electric Railroad & Light Company is one which he could not overlook. While deeply regretting the loss of Mr. Duffy's services to the Milwaukee company, it is my confident belief that his acceptance of this new position will prove most advantageous for both himself and the company which is now so fortunate in counting him among its officers. Mr. Duffy leaves with the most sincere wishes of all the officers and employees of the Milwaukee company. I have no immediate plans looking toward the filling of the position made vacant by his resignation from the company."

Construction News

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

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

RECENT INCORPORATIONS

***Minnesota Union Electric Railway, Minneapolis, Minn.**—Application for a charter has been made by this company in South Dakota to build an electric railway between Minneapolis and St. Cloud. Capital stock, \$2,000,000. Incorporators: Theodore A. Chadwick, Eugene G. Garwood, Achile Pouliot, Minneapolis, and G. M. Lawrence, Huron, S. D.

***Gull Lake Lumber Company, Gravenhurst, Ont.**—Incorporated in Ontario with headquarters at Gravenhurst to operate electric railways and other public utilities in Gravenhurst.

***Ottawa (Ont.) Traction Company, Ltd.**—Incorporated in Ottawa with a capitalization of \$10,000,000 to operate electric railways and other public utilities in Ottawa. Headquarters, Ottawa.

***Germantown Loop Railway, Philadelphia, Pa.**—Application for a charter has been made by this company in the interests of the Philadelphia Rapid Transit Company to build a loop on Musgrave Street and Slocum Street to provide access to the Pelham carhouse. The route over which the new company is to operate the cars will be northwest over Musgrave Street, southwest on Slocum Street to Germantown Avenue and back to the starting point. Incorporators: Boyd Lee Spahr and Ellis Ames Ballard.

North Anderson Street Railway, Anderson, S. C.—Chartered in South Carolina to build and operate an electric railway and a gas and electric light plant in Anderson. Capital stock, \$15,000. Officers: John W. Lindley, president and treasurer; M. M. Mattison, vice-president, and J. H. Anderson, secretary. [E. R. J., Oct. 25, '13.]

FRANCHISES

Pasadena, Cal.—The Pacific Electric Railway has asked the Council for an extension of its franchises so as to complete the improvements on South Raymond Avenue in Pasadena.

Riverside, Cal.—The Railway commission of California has granted the Pacific Electric Railway authority to construct its main line at grade across twenty-one streets or highways extending from the junction of Main Street, Fourteenth and Magnolia Avenue, in the city of Riverside, to the junction of Magnolia Avenue, Palm Avenue and Arlington Avenue, also in the city of Riverside.

San Diego, Cal.—The Los Angeles & San Diego Beach Railway has asked the Council for extensions of its franchises to operate steam trains to La Jolla and an electric line on C Street and Sixth Street to M Street in San Diego.

Stockton, Cal.—The Stockton Terminal & Eastern Railway has received a franchise from the Council to abandon portions of its franchise in Stockton. A drawbridge franchise over Miner Channel was also abandoned, and a new right-of-way for a trestle across the channel will be sought from the War Department. Later a franchise for a single track will be sought along Miner Avenue.

Aurora, Ill.—The Aurora, Elgin & Chicago Railroad has asked the Council for a franchise in Aurora.

Rockford, Ill.—The Rockford City Traction Company will ask the Council for a franchise to double-track on the Harlem and North Main loop in Rockford.

Rock Island, Ill.—The Rock Island Southern Railroad has asked the Council for a franchise in Rock Island.

Indianapolis, Ind.—A committee of taxpayers representing the citizens of the southeastern section of Indianapolis will ask the Board of Public Works within the next few days for an extension of the Shelby Street line on Minnesota Street from Shelby Street to Churchman Avenue in Indianapolis.

Muscatine, Ia.—The Davenport-Muscatine Railway has received a franchise from the Council for an extension on Mulberry Avenue and Washington Street in Muscatine.

Independence, Kan.—The Independence, Neodesha & Topeka Traction Company has received a franchise from the Council in Independence. It will now be submitted to the voters. This 17-mile line will connect Independence, Neodesha, Altoona, Fredonia and Topeka. W. N. Ness, Independence, general manager. [E. R. J., Oct. 18, '13.]

Oswego, Kan.—The Kansas Central Traction Company, Topeka, has received a franchise from the Council in Oswego. This line will connect Coffeyville and Parsons, via Edna and Altamont, with a branch from Altamont to Oswego. Philip Strack, Parsons, president. [E. R. J., Nov. 1, '13.]

St. Louis, Mo.—The United Railways of St. Louis has received a franchise from the Mayor and Council over Florissant Avenue from Calvary Avenue to Robins Avenue in St. Louis.

Sandusky, Ohio.—The Lake Shore Electric Railway has received a franchise from the City Council to move its track from the boulevard to the center of the streets in Sandusky. The work will cost \$100,000.

Montreal, Que.—The Montreal & Southern Counties Railway has received a franchise from the Council for certain extensions to its lines in Montreal.

Jackson, Tenn.—The Jackson Railway & Light Company has received a fifty-year franchise from the Council in Jackson. The company agrees to build several short extensions to suburban points. S. S. Bush, Columbia Building, Louisville, manager.

Richmond, Va.—The Richmond & Rappahannock River Railway has asked the Council for an amendment to its city franchise, relieving it, in the event of failure to secure a renewal of its county franchise in 1918, from the obligation to operate its car line along the Nine-Mile Road from Twenty-ninth Street to whatever may at that time be the corporate line.

TRACK AND ROADWAY

***Birmingham, Ala.**—Surveys are being made to build an electric line from Birmingham up Thaddex Mountain. About 4 miles of track are proposed from a connection with the Avenue F line in Birmingham. Daniel Hale, Birmingham, is interested.

Little Rock & Hot Springs Electric Railway, Little Rock, Ark.—This company has awarded a contract to the Arkansas Interurban Construction Company, Little Rock, to build 54 miles of its line. The contract will be sublet. L. Garrett, Little Rock, general manager.

***Vancouver, B. C.**—Plans are being considered by Edward Bath and associates to build an electric railway from Bella Coola, B. C., to Red Deer, Alta. Application for a charter will be made at the next session of the Dominion Parliament.

Clovis, Cal.—Surveys have been begun for the proposed railway between Clovis and Fresno. F. S. Granger is the promoter. [E. R. J., Oct. 25, '13.]

Pacific Electric Railway, Los Angeles, Cal.—Private right-of-way has been secured by this company through the eastern section of Glendale and work will soon be begun on the construction of the new electric railway to be built to that section.

Petaluma & Santa Rosa Railway, Petaluma, Cal.—This company is asked to consider plans to extend its line to tidewater in Marin County.

Geary Street Municipal Railway, San Francisco, Cal.—On the recommendation of the Public Utilities Commission, the Supervisors have adopted a resolution declaring in favor of the construction of a branch of this company's line from Geary Street to Turk Street along Masonic Avenue in San Francisco, to connect with the proposed new baseball park.

Northwestern Pacific Electric Railroad, San Francisco, Cal.—Work has been begun by this company on its line from Fairfax to Manoir.

United Railroads, San Francisco, Cal.—Work on the extension of the San Bruno Avenue line from its present westerly terminus at Dwight Street in San Francisco to Railroad Avenue and the county line will be begun by this company at once.

Southern Traction Company of Illinois, East St. Louis, Ill.—This company will begin at once laying rails on Fourth Street, East St. Louis.

Hillsboro, (Ill.) Railway.—This company has been dissolved.

Oil Belt Railway, Martinsville, Ill.—A special meeting of the stockholders of this company will be held Dec. 9 at Oblong, Ill., to vote upon the proposition to execute a mortgage on its properties and franchises to secure a bond issue of \$2,500,000. [E. R. J., Sept. 20, '13.]

Chicago, Peoria & Quincy Traction Company, Quincy, Ill.—A special meeting of the stockholders of this company will be held Dec. 6 at Quincy to consider the question of raising the capital stock from \$200,000 to \$3,000,000. This line will connect Quincy and Peoria. E. A. Van Ness, secretary. [E. R. J., Sept. 13, '13.]

Independence, Neodesha & Topeka Traction Company, Independence, Kan.—This company has awarded a contract for the construction of bridges across all the intervening bridges for this line between Independence and Neodesha to the Blodgett Bridge & Construction Company, Kansas City. T. Blarksley, Neodesha, president. [E. R. J., Oct. 18, '13.]

Arkansas Valley Interurban Railway, Wichita, Kan.—This company's extension from Halstead to Hutchinson will be financed by the Kansas Gas & Electric Company. Surveys have been completed.

Owingsville & Olympian Springs Railway, Owingsville, Ky.—This company, recently incorporated in Kentucky for the purpose of operating a 5-mile railway from Owingsville to Olympia, will not build an electric railway, but will operate gasoline cars. W. W. Hubbard, Owingsville, president and general manager, is in charge of the construction.

Michigan United Traction Company, Lansing, Mich.—This company plans to replace old rails over its entire system in Battle Creek with new 100-lb. rails.

Springview, Neb.—Plans are being considered to build an electric railway between Springview and Ainsworth, 25 miles. Power will be secured from the Ainsworth Light & Power Company, Ainsworth. No names are yet given of those interested in this project.

St. John (N. B.) Railway.—It is expected that within two months this company will have its line extended for one mile along the Marsh Road and thence to Kane's Corner and in again, making a circuit. Surveys are now being made by this company for an extension from St. John to Loch Lomond, 14 miles, and for a portion of the line from St. John to Rothesay. It is also planned to build an extension from St. John to Westfield and Milledgeville.

New York Municipal Railway Corporation, Brooklyn, N. Y.—This company has secured the consents of property owners on Fulton Street, between Tillary Street and Williams Place, Brooklyn, to the third-tracking of the elevated railroad between those points.

***London, Ont.**—Negotiations are being entered into with business men of Aylmer and Belmont and residents of townships intervening for the construction of a radial railway between Belmont and London. Some time ago a proposition was submitted to the Board of Trade in London by those interested in a proposed railway in this territory, but the deal fell through. The promoters are now to be offered the use of the London & Port Stanley Railway, with its terminals in London, at a nominal cost, and it is probable that the line will be built north out of Aylmer to Belmont and west from there to a point on the London & Port Stanley Railway about 5 miles south of London, where the junction will be effected.

Imperial Traction Company, Ottawa, Ont.—This company has decided not to extend the proposed Smithville line to Bridgeburg and from Hamilton to Toronto this year; construction will be begun next spring. A prospective route will be from Smithville to Hamilton, where it will branch to Bridgeburg, across the Niagara River from Buffalo.

***Owen Sound, Ont.**—At a meeting of the Board of Trade on Oct. 28 a resolution was adopted requesting the

Town Council to appeal to the Ontario government through the Hydro-Electric Power Commission of Ontario to investigate the question of constructing a radial railway from Owen Sound to Guelph. The government will be asked to furnish estimates of the cost.

Forest Hill Electric Railway, Toronto, Ont.—This company is asking the Ontario government for permission to proceed with the construction of its line, and it is expected work will begin shortly. [E. R. J., Oct. 25, '13.]

Metolius, Prineville & Eastern Railway, Prineville, Ore.—Most of the right-of-way, the terminals in Metolius and Prineville and a bonus of \$60,000 have been secured and construction will be begun within the next month by this company on its 30-mile line between Prineville and Metolius. Application for a charter will soon be made in Washington. Power will be secured from Metolius from the Deschutes Power Company. Henry S. Cram, Prineville, is interested. [E. R. J., Aug. 9, '13.]

Conestoga Traction, Lancaster, Pa.—Surveys are being made by this company along the river to McCall's Ferry, via Willow Street, Lancaster, New Danville, Rawlinsville, Mount Nebo and Pequca.

Mahoning & Shenango Railway & Light Company, New Castle, Pa.—Plans are being made by this company for an extension from New Castle to Erie, via Mercer, Meadville and intervening places.

Pittsburgh, Harmony, Butler & New Castle Railway, Pittsburgh, Pa.—Work has been begun by this company on its line from Ellwood to Morado.

Chambersburg & Shippensburg Railway, Shippensburg, Pa.—Plans are being considered by this company for a 20-mile extension to Carlisle, via the Walnut Bottom Road.

Williamsport (Pa.) Passenger Railway.—Plans are being made by this company to extend its West Fourth Street line in Newberry from Diamond Square to Poplar Street.

***Three Rivers (Que.) Traction Company.**—Shawinigan water and power interests are identified with a project to build an electric railway in Three Rivers, Que., and to construct a line to connect Three Rivers with Berthier in the west and Portneui in the east. The incorporators of the company are J. Aldred, T. McDougall, H. Murray, J. C. Smith, W. S. Hart, of Montreal, and D. Murphy, Ottawa, Ont.

Chattanooga Railway & Light Company, Chattanooga, Tenn.—This company has placed in operation its new Vance Avenue line in Chattanooga.

Nashville Railway & Light Company, Nashville, Tenn.—Work has been begun by this company on the extension of the Woodland line from Eastland to Greenwood Avenue in Nashville.

Nashville (Tenn.) Traction Company.—Plans are being made by this company to begin surveys on its line in Nashville. This company plans to build 34 miles of track in Nashville. Walter O. Parmer, Nashville, is interested. [E. R. J., Oct. 11, '13.]

Bryan & Central Texas Interurban Railroad, Bryan, Tex.—During the next thirty days this company will award contracts to electrify 6½ miles for the Bryan & College Interurban Railway and for trolley wire, bonds for rails, poles and all material for an electric line.

Minneapolis, Merrill & Marinette Railway, Merrill, Wis.—This company states that its 26-mile line between Merrill and Athens will be a steam line. F. W. Kubasta, Marinette, secretary. [E. R. J., Oct. 18, '13.]

SHOPS AND BUILDINGS

Edmonton (Alta.) Interurban Railway.—Plans are being made by this company to begin soon the construction of its new carhouse on Algonquin Avenue in Edmonton.

Northern Electric Railway, Chico, Cal.—Bids are being asked by this company to build a joint passenger and freight station at Meridian, on the Marysville & Colusa branch. The structure will be of mission architecture and is estimated to cost about \$5,000.

Northwestern Pacific Electric Railroad, San Francisco, Cal.—Plans are being considered by this company to build a new reinforced concrete depot in Manor.

Illinois Traction Company, Peoria, Ill.—This company, which recently purchased the People's Traction Company, plans to build a new freight and passenger station in Abingdon.

Paducah (Ky.) Traction Company.—This company has practically completed the construction of a new brick carhouse at a cost of \$30,000.

Jersey Central Traction Company, Keyport, N. J.—This company is now building a new carhouse and four new stations along its lines.

Dominion Power & Transmission Company, Ltd., Hamilton, Ont.—This company has received a permit to build a new freight depot. The cost is estimated to be about \$5,000.

Toronto (Ont.) Railway.—Plans are being made by this company to build a carhouse in Bracondale to accommodate the cars on its St. Clair Avenue line. The cost is estimated to be about \$14,000.

Aberdeen (S. D.) Railway.—This company is building an addition to its carhouse for storing two transformers.

POWER HOUSES AND SUBSTATIONS

Lewiston, Augusta & Waterville Street Railway, Portland, Maine.—This company will place in operation in its substation at Lisbon Falls a 300-kw motor-generator set and switchboard. The apparatus was purchased from the General Electric Company.

Winnipeg (Man.) Electric Railway.—It is stated that this company plans to build another power plant at Grand Bonnet Falls, 12 miles down from its present plant at Lac du Bonnet. J. G. White & Company, Inc., New York, contractors.

Union Street Railway, New Bedford, Mass.—This company has placed an order with the General Electric Company for a 700-hp, 2300-volt induction motor and a 500-kw, 550-volt generator with 10-kw exciter, switchboard and accessories.

Houghton County Traction Company, Houghton, Mich.—This company will add to its station equipment a 400-kw rotary converter, two 100-kw, 11,000/370-volt transformers and a switchboard. The apparatus has been purchased from the General Electric Company.

City Light & Traction Company, Sedalia, Mo.—This company expects to purchase a condenser and cooling tower and a voltage regulator and to build soon an ice-storage room.

Elmira Railway & Light Company, Elmira, N. Y.—Additional substation equipment will be installed by this company in its power station at Elmira, consisting of a 1000-kw rotary converter, three 350-kva, 2200/6600 water-cooled transformers, switchboard and accessories. The contract for the apparatus has been placed with the General Electric Company.

Jamestown (N. Y.) Street Railway.—An addition to this company's power house in Jamestown is under construction. The structure will be 50 ft. x 75 ft. A new 7500-kw turbo-generator is to be installed. This power house will supply current to run both city and interurban car lines, the Jamestown commercial lighting plant and the electric lighting at Mayville, Stow, Ashville, Lakewood, Celeron and Falconer.

Rochester & Sodus Bay Railway, Rochester, N. Y.—This company's power house at Ontario was destroyed by fire on Nov. 1. The loss is estimated to be about \$40,000.

Toledo Railways & Light Company, Toledo, Ohio.—This company will install in its power house three 300-kw, 3300/440-volt transformers, switches and accessories which have been ordered from the General Electric Company.

Hummelstown & Campbellstown Street Railway, Hershey, Pa.—This company is building a new power house in Hershey. It has purchased two Worthington engines and two generators.

Northwestern Pennsylvania Railway, Meadville, Pa.—This company has under construction a substation at Richley's Grove Station and has just begun the construction of a combination substation, waiting station and freight depot at Edinboro. The company has purchased substation equipment for these new substations.

Manufactures and Supplies

ROLLING STOCK

Brandon (Man.) Municipal Railway expects to purchase nine new cars.

Brooklyn (N.Y.) Rapid Transit Company has recently purchased two 55-ton locomotives from the General Electric Company.

Louisville (Ky.) Railway has completed and placed in operation ten of its new trailers. The cars have no platforms, exits and entrance being provided at the center. The space heretofore taken up by the platforms is occupied by semi-circular seats, holding five or six people each. The total seating capacity of the car is forty-two. Stoves are used in heating the cars, a fan system distributing the heat. Vents in the roof assist in the ventilation. The doors are operated by compressed air. The side entrance is divided into three sections, the outer ones being used for exits and the center for entering. This prevents crowding and saves time. The cars were designed by the Louisville Company.

TRADE NOTES

John O. Powers Company, New York, N. Y., advertising agent, has moved to 11 West Twenty-fifth Street.

Edward J. Hunt, Newark, N. J., has received an order from the Lynchburg Traction & Light Company, Lynchburg, Va., for a large amount of transformer-oil drying apparatus.

Railway Utility Company, Chicago, Ill., has appointed Charles A. Eggert sales engineer, with headquarters in Chicago. Mr. Eggert has been with this company for the past twelve years.

Steel City Electric Company, Pittsburgh, Pa., has appointed the Ohio Distributing Company, Hearst Building, Chicago, as its sales representative in the Central Western States, the previous contract with the I. A. Bennett Company having expired.

Keystone Lubricating Company, Philadelphia, reports that the United States District Court for the Northern District of Illinois has declared that it has the sole right to use the word "Keystone," as applied to greases and lubricating oils. The case was decided under the trademark law.

Ottawa (Ont.) Car Manufacturing Company, Ltd., has been incorporated with a capital stock of \$3,000,000. This company will manufacture all kinds of vehicles and will make a specialty of passenger and freight cars for steam and electric railways, continuing the business of the Ottawa Car Company.

Johnston & Jennings Company, Cleveland, Ohio, has taken over the manufacturing and selling rights of the Ludlow track drill. This company is prepared to make shipments of new machines and repair parts from stock. The Ludlow drill has been on the market for nine years and is now being effectively used in rebuilding track in all parts of the world.

Birmingham Car & Manufacturing Company, Birmingham, Ala., has been placed in the hands of a receiver, John S. Cox. The petition for receivership alleged that the concern committed an act of bankruptcy last September when it transferred a portion of its properties to the Hill & Griffiths Company at Cincinnati, making it a preferred creditor.

General Electric Company, Schenectady, N. Y., has received orders for motor car equipments from the Charleston-Dunbar Traction Company, Charleston, W. Va.; the Interurban Railway, Des Moines, Ia.; the Philadelphia Rapid Transit Company, and the Pacific Electric Railway. Five type M control equipments have been ordered by the New York State Railways.

Flexible Railway Supply Company of Canada, Ottawa, Ont., has recently been formed with factory and offices in Ottawa. Charles Forth, Boston, Mass., is the promoter and manager of the new company. Railway supplies of all kinds will be manufactured by the company, which is a limited liability corporation of Ottawa men, with the exception of Mr. Forth.

George W. Gano, who has been electrical inspector in the office of Marsh & McLennon, fire insurance brokers

of Chicago, and whose work has been principally in connection with the rating of street railway properties for insurance purposes, has been appointed superintendent of the electrical department of the Kentucky Actuarial Bureau at Louisville, Ky. The department has just been organized and will cover the entire electrical field in that State for the fire underwriters.

Pyrene Manufacturing Company, New York, N. Y., has appointed E. J. Waring, formerly treasurer and general manager, as vice-president and general manager of the company, in place of E. M. Davidson, resigned. Mr. Davidson will still retain an interest to the company and will continue in an advisory capacity to it. The company has recently received orders for its fire-extinguishers from the New York, New Haven & Hartford Railroad, the Albany Southern Railroad, New York Edison Company, Housatonic Power Company and the Pittsburgh Railways.

ADVERTISING LITERATURE

Philadelphia Commercial Museum, Philadelphia, Pa., has issued in pamphlet form a tabulation of foreign weights, measures and moneys and their equivalents in the weights, measures and monies used in this country.

Johnston & Jennings, Cleveland, Ohio, have issued a catalog describing their electric mono-rail hoists and jib cranes for foundry, machine and forge shops. Another catalog describes Ludlow track-drilling machines for any gage track.

Pettingell-Andrews Company, Boston, Mass., has issued a pamphlet entitled "Juice," which marks the twenty-seventh year of this company and the twenty-fifth anniversary of the present management, and describes the personnel and organization of the company.

General Electric Company, Schenectady, N. Y., has recently issued data sheets on its new automatic sectionalizing switch for railway feeder systems, the application of which to the lines of the San Diego (Cal.) Electric Railway was described in the *ELECTRIC RAILWAY JOURNAL* for April 26, 1913. The company announces that it will also issue a bulletin on the subject at an early date.

Pressed Prism Plate Glass Company, Morgantown, W. Va., has issued a catalog describing and illustrating its special designed imperial prismatic glass and imperial prism-plate ornamental glass for railroad and steamship use. This glass is especially suitable for both exterior and interior Gothic windows, and has artistic appearance from the standpoint of design as good leaded glass, but is manufactured in one single light of polished plate glass, thus giving it greater strength and lowering maintenance cost.

Ohio Brass Company, Mansfield, Ohio, has issued a catalog describing and illustrating the various types of its catenary system of line construction used on the following railways: Chicago, Lake Shore & South Bend Railway, Fort Worth Southern Traction Company, Galveston-Houston Electric Railway, Great Northern Railway, Montreal & Southern Counties Railway, New York, New Haven & Hartford Railroad, Northern Ohio Traction Company, Oregon Electric Railway Company, Pacific Northwest Traction Company, Piedmont Traction Company, Rock Island Southern Railway, Southern Traction Company, Syracuse, Lake Shore & Northern Railroad, Washington, Baltimore & Annapolis Electric Railway, Waterloo, Cedar Falls & Northern Railways and other railways. These systems of catenary construction are classified into four general types: (1) steel messenger and copper trolley wire; (2) copper messenger and copper trolley wire; (3) copper messenger and steel trolley wire; (4) steel messenger cable, steel contact wire and auxiliary copper feeder trolley, for (a) single construction or (b) compound catenary construction. Developments in recent years have been along the lines of greater flexibility in the catenary system. A collector, whether pantograph or trolley wheel traveling along a contact wire, should meet with no obstructions or "hard spots" and in order to accomplish this the latest types of hangers are made flexible. This result is obtained by forming the upper end of the hanger rod or strap into a loop which engages the messenger. As the collector travels under the hangers they are lifted slightly so that the collector carries practically the weight of the trolley wire only.