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### ELECTRIC WELDING ECONOMIES

The imposing scale on which electric welding is being carried out by the United Railroads of San Francisco and the Third Avenue Railway, New York, as described in the May 17 and June 21 issues respectively, is significant of something more than repair shop methods. First, it indicates a belief on the part of these companies that welding can be profitably used to repair or even reconstruct mechanically the older types of motors if their electrical efficiency is high; second, and far more important, is the tendency toward the conservation of resources which is indicated by this practice. Electric arc welding is a much later application, certainly so far as a commercial process is concerned, than transformer welding and has proved very useful for the rehabilitation of electric railway equipment of all kinds. Electric railway men may have been wastrels in the "boom" days of the industry, but designs are not now changed so rapidly as they formerly were, and present financial conditions demand a change to the spirit of economy that will patch a cloak ere buying a new one. The "before and after" views surely contain a profitable lesson for the companies now burdened with large quantities of supposed scrap.

### THE LUZERNE CARHOUSE

At first sight it would seem that little practical novelty is possible in carhouse design and equipment, but a different conclusion will be reached on studying the Luzerne installation of the Philadelphia Rapid Transit Company as described at length in this issue. Even the method of construction deviates from previous practice in reinforced concrete carhouses inasmuch as the columns, posts, girders and other members were separately cast at a great saving in time as compared with monolith work. The views of the completed carhouse with its handsome brick and terra-cotta arches announce the desire of the

Philadelphia management to make its structures worthy of their importance to the city's welfare. It is not customary for operating carhouses in Northern cities to be free of track doors, but the usual objections to working in an open building are answered here by the excellent drainage system and a warm-water supply for car cleaning. Since the bays are double-ended, doorless and small enough to hold no more than thirty-nine cars each, utmost flexibility of operation and freedom from heavy fire losses are assured. The novel gravity system of sand supply for outgoing cars eliminates all the obstruction and uncleanness of the old-fashioned sand bin. The provision of a shop bay is in accordance with the present tendency to concentrate heavy repairs and manufacture at one shop while permitting each operating depot to conduct such work as truck, wheel and motor exchange. Finally, it is to be noted that in this installation the platform men and shopmen have been furnished with conveniences which are not a whit inferior to those in many executive offices.

### PAPERS AT THE NEW YORK MEETING

The New York Electric Railway Association may well be felicitated on having secured so many high-grade papers for its annual meeting. Of these papers, that on "Operating Economies," by Messrs. Doyle, Gove and McWhirter, is likely to have the most immediate practical effect for its forceful presentation of methods which cannot be waved aside with the conservative's shibboleth: "Not suited to local conditions." The slotting of commutators, the welding of broken equipment, the impregnation of coils, the reboring of old motors, the use of manganese bronze for check plates, etc., are definite proposals which when carried out properly will decrease car defects and maintenance costs on any system, large or small. When, as in this case, the matter of adopting improvements is put squarely before the operator on a dollars and cents basis, his own mileage costs for like items will show him quickly enough whether or not he has anything to learn from the united experience of three of the largest railways in the country. This paper also discusses the opportunities for economies in the larger question of car design. Here, too, theory is backed by the first data on prepayment operation free from factors which have obscured results in other instances. When the Third Avenue Railway took over the operation of the Fifty-ninth Street line the entire equipment was changed in one night from the ordinary car to another type which differed chiefly in its provision for prepayment operation with fare boxes. During the month following the revenue increased 9.3 per cent, while the car mileage was cut down 3½ per cent, although no transfer privileges were changed, no holidays or special events occurred to stimulate traffic and there was practically no curiosity riding. Dovetailing with the paper on

"Operating Economies" is that by Mr. Dempsey on "Construction of Timetables and Schedules," in which the transportation man will find many practical data on traffic analysis. Mr. Barnard's study of "The Proper Location of Trolley Wire on Curves and Corresponding Location of Frogs" illustrates the unexplored areas for original work still existing in the electric traction field. Mr. Barnard's paper is the first, so far as we recall, in which the subject of the proper location of the trolley wire has been approached from an engineering standpoint. Yet all will admit that the subject is a most important one, not only because it affects the cost of maintenance, but because the transportation department is even more deeply interested in the effect on schedules and upon the comfort of passengers at night when the wheel leaves the wire. Mr. Bolen's warm-hearted discussion on the "Relations Which Should Exist Between the Railway Companies and Their Employees" necessarily is not of the same tangible nature as the papers on engineering economies, for it deals with the often indefinable human element in railway operation. But his words deserve careful consideration since the spirit of helpfulness advocated by him has been successfully inculcated in the system with which he is connected in spite of its great size and scattered territory. The other papers at the Brighton Beach meeting were also of a high order.

#### HIGHER ASSOCIATION EFFICIENCY

At the Brighton Beach meeting of the New York Electric Railway Association J. S. Doyle, superintendent of car equipment Interborough Rapid Transit Company, outlined a plan which if adopted should do much to make association work more effective. It is applicable in principle to any association, and if introduced by the New York organization will signalize a valuable advance in the practical application of association work to daily needs. Anyone who has attended the meetings of many associations cannot but be impressed with the interest and enthusiasm with which suggestions for improving the service, as made in the different papers, are received at the time of the convention and the quickness with which the same suggestions are forgotten after the return home of the delegates. It may be, it is true, in some isolated instances, that the idea obtained through a paper is applied by someone, but if that is the case, the author of the paper rarely hears of it. Hence a large part of the benefit which he might derive from describing his practice at the convention is lost because he never learns whether anyone using his plan has found it practicable or whether it has been improved.

Mr. Doyle's plan is for the association to devise a follow-up system which will enable it to determine how many operating economies previously made public at its meetings have really been adopted by its members. The character of data which Mr. Doyle had in mind is indicated by the paper on "Operating Economies" prepared by himself and Messrs. Gove and McWhirter, as noted elsewhere in this issue. This paper is largely a record of savings obtained by means of certain practices which are applicable to properties of almost any size. Mr. Doyle believes that such records should be continuous rather than spasmodic, that they should embrace the practice of all members, if possible, and

that if they disclose a clearly evident economy, it will be available to all members of the association.

It may be, it is true, that methods suitable on one road will not be best for another, but in that case the systematic checking up of practice, as recommended by Mr. Doyle, would at least enable each manager to learn whether his department heads are applying the lessons derived at the convention, and if not, why not. Local conditions will naturally affect the direct use of many methods, but these local conditions could be classified and tabulated, and a committee of the association could then prepare a report which would interpret the figures and define their application to specified conditions. In the case of brakeshoe records, for instance, all of the member companies could be asked to give their operating conditions, such as speed, grades, territory, weight of car, types of trucks and wheels, etc., so that these factors could be taken into consideration in connection with the types of brakeshoe heads and shoes, the limiting wear of shoes and the cost in cents per 1000 ton miles. Such extended studies of single operating items would, of course, involve the expenditure of labor on the part of the committees in charge of the study and perhaps a certain amount of statistical work, which, however, would be much less arduous in the case of a territorial association than of a national body. But the subsequent saving to the members should more than repay for this labor and would greatly enhance the value of association membership.

#### THE ARBITRATED RESULT IN CLEVELAND

The report of the board of arbitration in the Cleveland case was rendered in less than two weeks after the completion of oral arguments, and the promptness with which the conclusions were reached is not only creditable to the board but it is effective in removing without long delay some of the causes of difference from which the arbitration arose. The company is upheld both as to its right prudently to exceed the car-mile operating expense allowance and in its application for an increase in this allowance.

On some of the points where the company did not carry its contention, a strict construction of the letter of the ordinance and a corresponding interpretation of the spirit in which it was framed were responsible for the decision of a majority of the arbitrators. Where the city lost it was in some respects willing to lose something, as for instance in the question of increase in the car-mile allowance, one of the principal respects in which the company needed relief from the burden of higher costs. The brief list of the main points in the decision which we published in our issue of last week shows the main conclusions. In our issue of this week we publish the report in full, believing that its discussion and findings, although we differ from them in some details, express a wholesome spirit of conciliation and point the way to co-operation in which the city and the company should engage in the future.

The board finds that the maintenance of an insurance reserve is not sustainable by any provision in the ordinance. The effect of its conclusion is that since the ordinance does not provide specifically for an insurance reserve, the company is not justified in keeping a reserve for that portion of its insurance which is not protected by policies.

The decision does not go beyond the statement that the ordinance fails to express itself on this point. The conclusion of the majority that no reserve other than that provided for specifically may be created and maintained beyond the expiration of an ordinance year to offset damage claims meets exactly the claim of the city on this point. Here again the board is bound by the written words of the contract, for it recognizes that safe business policy demands the creation of a reserve by a company acting under a general franchise. The majority, however, finds that there are controlling reasons why this practice is practically forbidden by the Cleveland ordinance. It also finds that the amount in the permissible annual reserve for damages remaining unexpended at the end of the year constitutes a surplus and should not be held as a reserve beyond the conclusion of the ordinance year. The decision recognizes the fact that a failure to maintain such a reserve tends to impair the capital under ordinary circumstances, but it says that in the opinion of the majority other provisions in this case provide an effective substitute for an action which would be necessary on the part of other companies. We think that the majority of the board assumes that the city will carry out in good faith any provisions which it may be called upon to enforce because of excessive or unanticipated damage claims. Hereafter the duty of living up to this assumption rests upon the city. The company sought to provide for these claims specifically by a reserve fund which could not be used or misapplied for other purposes, and its action in this respect was without fault when viewed in the light of good practice. In view of these conclusions the finding of the majority is that the sums in the insurance and accident reserves should be placed to the credit of the interest fund. As the amounts of these reserves are, respectively, \$63,000 and \$144,000, this change would have a material effect on the interest fund, and possibly on the rate of fare, if the other conclusions of the board were not so far-reaching.

The board criticises the present method of computation of the deductions from the interest fund, and as a reason for some of the existing differences points to the impracticability of the provisions governing this matter. It holds, however, that the company method is fairer than that of the city and that the results obtained under it more nearly approximate the condition in which the interest fund should be found. This conclusion should help to do away with the inconsistency between the city and the company methods of stating the condition of this fund.

The finding of the board on the question of whether the company has a right to exceed the allowance for operation without the consent of the city or the award of a board involves a definite question and a vital principle. The city would have had the company make its expenditures meet the allowance willy-nilly. The fact that the company did not do so for the reason that it could not reasonably do so is as plain as is the fact that the board grants a higher allowance because it thinks the company needs the money. The board decided not only that the company needed more money in the past but that it needs more in the future.

The board takes up the question propounded by the city with respect to the charge of \$800,000 for the scrapping of power equipment, due to the contract for power with

the Cleveland Electric Illuminating Company, and answers unanimously in the negative the query as to whether the charges shall be equally distributed over the entire period of time defined by the power contract when the scrapping has been authorized by the city. This forbids the practice urged by the city, which would have spread the retirement of this equipment over a period of ten years.

The unanimous allowance of 12.1 cents per car mile for operating expenses other than maintenance is an increase above the present allowance of 11.5 cents. The only specific reason announced by the board for this increase is the enhanced cost of labor. That is the extra cost which the company said made it necessary to increase the allowance. The change is effective March 1, 1913, and thus will correspondingly reduce the current deficit.

In declining to increase the maintenance, renewal and depreciation car-mile allowance, the majority of the board finds that the greater part of the over-expenditure of this fund occurred during the early operation under the ordinance, when the city did not have the same supervision over the outlays for renewal or replacement that it now holds. Its presumption that the present allowance is adequate because the officers of the company, having long experience, accepted it when the ordinance was framed is an argument that sounds logical; but it does not seem logical to those who have had personal contact with the successive steps in the Cleveland situation. Although the company legally acquiesced in these steps, it was practically the city that fixed the terms in all their details, just as it was the city that forced the stockholders to surrender 100 per cent of stock and to take 55 per cent in exchange therefor.

This, however, is of less importance than the action of the board regarding the over-expenditures in the operating and the maintenance fund of, respectively, \$259,000 and \$324,000, a total of \$583,000. Although duly cautioning the company to use diligence and prudence in restricting its expenditures, the board recommends the transfer from the interest fund of enough directly to offset the over-expenditure of the operating fund, and also the transfer from time to time of such amounts as will offset the over-expenditure of the maintenance, renewal and depreciation fund without reduction of the interest fund to less than \$400,000. It puts it beyond the power of the city to play with the company in this matter. However, as an alternative to action by the Council on this recommendation the board decides that both of the allowances shall be increased to such amounts respectively as will balance the over-expenditures in the funds by Feb. 28, 1914.

The action of the company in not adding overhead charges to renewal and replacement expenditures is commended, and this is a deserved recognition of the conservative policy of the company in this respect.

A fresh start in the relations between the city and the company is assured by the fact that the over-expenditures or deficits are to be wiped out, by the substantial increase authorized in the car-mile allowance for operating expenses and by the reiteration of the "safeguards" to "invested capital" fixed by the contract; and this should operate with the conciliatory findings of the board to make impressive the injunction of fair treatment with which the decision is concluded.

# Luzerne Carhouse of the Philadelphia Rapid Transit Company

Description of a Unit-Type Reinforced Concrete Structure for 336 Cars, with Separate Buildings for Stores, Sand Handling, Heating and Transportation Purposes

Some interesting departures from usual practice in carhouse construction and operation are embodied in the reinforced concrete carhouse which the Stotesbury management of the Philadelphia Rapid Transit Company has recently placed in operation at Tenth and Luzerne Streets.

Luzerne Street as shown on the general plan on page 1138. The construction cost of the fireproof group hereinafter described was \$1,790 per car.

One striking feature in the design of the carhouse is that its functions are purely those of a track structure, all



Luzerne Carhouse—Front View, Showing Shop Bay at Right, One of the Catenary Towers, Etc.



Luzerne Carhouse—Rear View, Showing Transportation Building at Left, Sand-Handling Bay Across the Rear of the Carhouse, Etc.

The present installation not only comprises a double-end operating carhouse with light repair shop for 336 near-side 45-ft. 2-in cars but also a stock building, a building for the transportation department, a sand elevator and a boiler house. At this time the 252 cars of nine lines pass through the new carhouse, but it is likely that more lines will be cared for there in the near future. Additional room for future needs is afforded by a plot on the opposite side of

other utilities, such as stockrooms, sand bins, offices, etc., being placed elsewhere. Its ten bays are therefore of harmonious design and equipment with the exception of some deviations in the shop bay provided for light repairs. The building has a maximum width of 375 ft. and a maximum length of 611 ft. The shop and two adjoining bays were shortened, however, at the rear to 336 ft. in order to provide space for the utilities buildings. Not a single win-

dow is built in the entire carhouse nor are any track doors used except for the repair bay. Fully 60 per cent of the inspection tracks, starting at the front of the building, are furnished with open pits and the tracks in the repair shop have pits throughout.

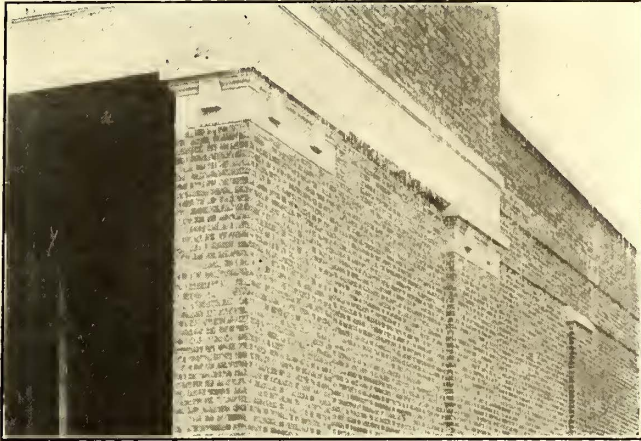
GENERAL APPEARANCE

While reinforced concrete is employed for the girders, posts, roof slabs and floors, the exterior appearance of the carhouse has been made very pleasing by using for the

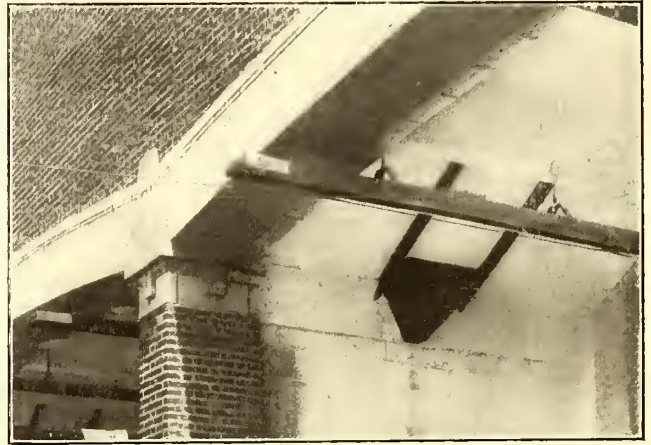
ladder feeding five bays. Untidiness on the ground has been minimized by paving all track entrances and exits with hard-burned brick. Arc lamps which are suspended from brackets over the track entrances maintain the attractiveness of the building at night, insure greater safety in operation and keep prowlers off as well.

METHOD OF CONSTRUCTION

The carhouse was built in record time through the use of the "Unit-Bilt" reinforced concrete system of the Unit



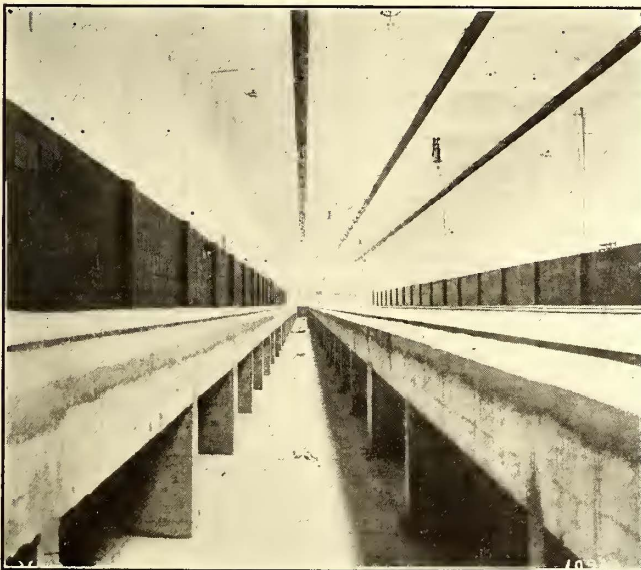
Luzerne Carhouse—Detail, Showing Blend of Brick Wall and Terra Cotta



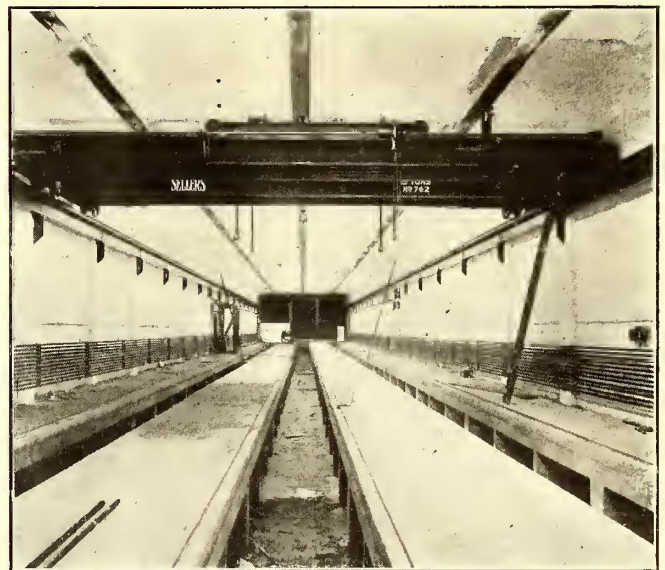
Luzerne Carhouse—Detail, Showing Part of Arches and Column; Also Top of Sand Outlet

walls a hard red brick laid in modified Flemish bond with darker headers and stretchers and 3/4-in. struck joints and turned extensively with buff terra cotta. This makes an attractive combination which harmonizes remarkably well with the style of architecture typical of Philadelphia dwellings. All bays except the one along each wall are slightly arched and are free of columns. Rectangular columns were required for the first or shop bay on account of the doors, and, for the sake of balance in design, like columns were installed for the tenth bay. The usual tangle

Construction Company, St. Louis, Mo. The superior speed of this form of concrete construction is due to the fact that the members can be cast on the ground long before the excavations and footings are finished. As the quantities handled are comparatively small, the concrete may also be poured under ideal circumstances and the individual girders, columns and floor slabs allowed to season for weeks before they become part of the building. Thus the possibility of failure due to the premature removal of forms is avoided. The Philadelphia Rapid Transit Com-



Luzerne Carhouse—Pit Construction



Luzerne Carhouse—Repair Bay

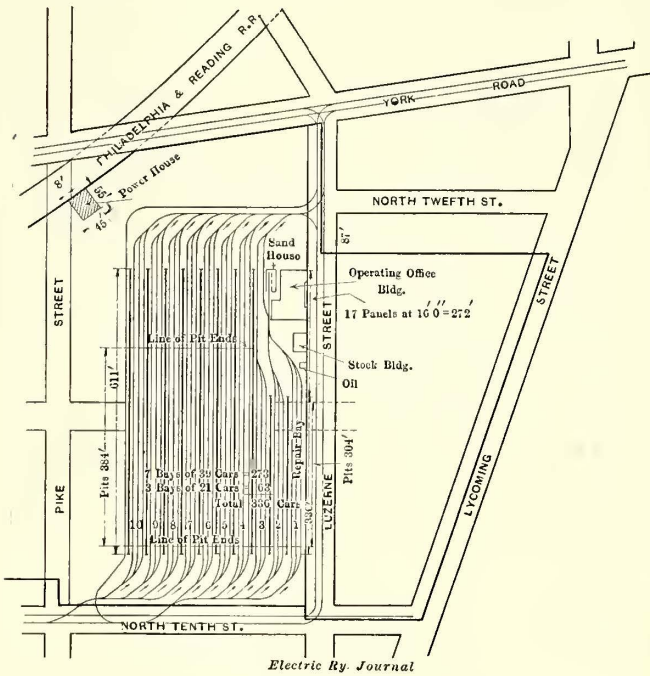
of overhead wires and poles in front of many carhouses has been greatly simplified in this instance by the erection at each end of the building of two steel towers which carry a transverse catenary for the suspension of the overhead wires. Despite the great length of the span, only two intermediate poles have been required at the front and but one pole at the rear. The special work at the entrance consists of two ladders from the main line for thirty tracks, each

pany estimated that the construction would require one year, but the carhouse actually was completed within seven months after excavation had begun late in July, 1912.

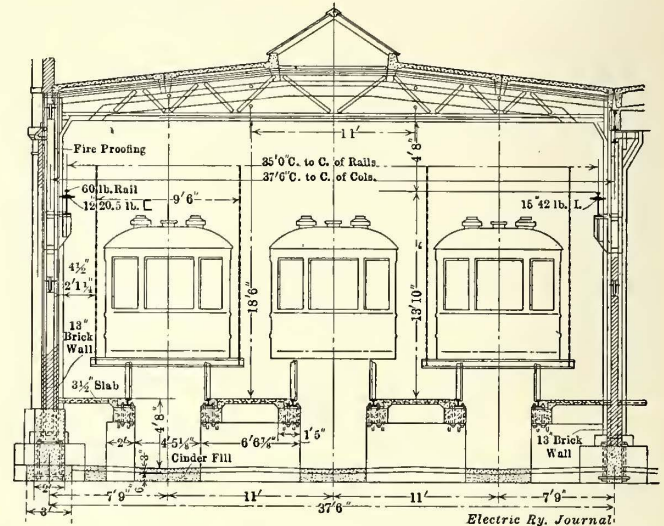
In the unit system the connections between the members are made by leaving sufficient steel exposed at the joints, which are filled with a rich cement grout after the placing of the unit. It is contended that this method insures complete development of the steel and concrete for tension

and shear stresses; and that it gives a more satisfactory structure than a monolith, because all joints come at pre-determined points and not where the field conditions allow. The unit method also permits proper provision to be made for the prevention of shrinkage and expansion cracks before the members are in position. Furthermore, the mem-

were built complete and then the derricks were moved in order to repeat the operation. The largest girders handled in this manner weighed 12½ tons each. The usual members handled were as follows: Transverse girders, 154 cu. ft. volume, weight 23,100 lb., reinforcement with rods up to 7/8 in. square; roof slabs, 41.8 cu. ft. volume, weight 6270 lb., reinforcement with 3/8-in. round rods and 5/8-in. square rods; columns, 34.6 ft. volume, weight 5190 lb., reinforcement with 1-in. round and 3/4-in. square bars. The beams and slabs were calculated for a maximum deflection of 1/30 in. per foot of span. The stresses in the concrete were specified not to exceed the following limits:



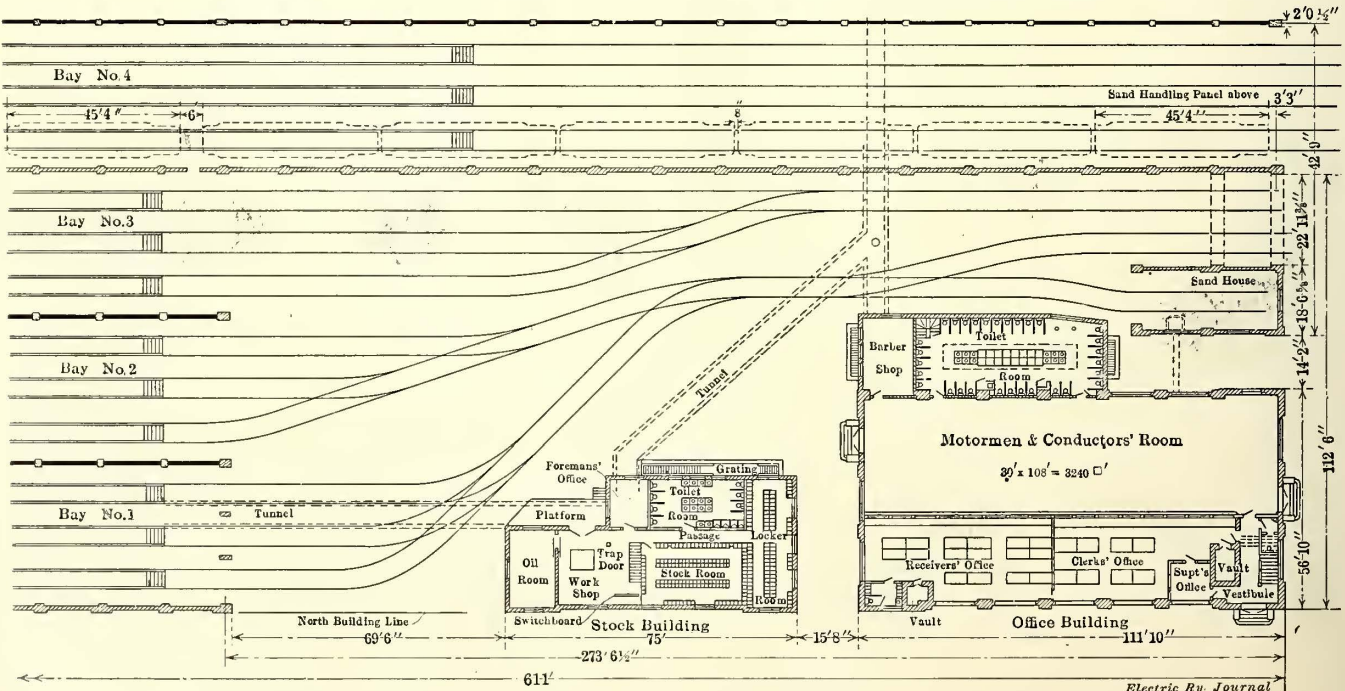
Luzerne Carhouse—General Plan



Luzerne Carhouse—Cross-Section of Bay for Light Repairs

bers can be finished a few hours after being cast, thus avoiding the expensive process of cutting or the unsatisfactory practice of plastering. To take care of the appreciable expansion in a building of this size, two longi-

Extreme fiber stresses on concrete in compression, 600 lb. per square inch; shearing stresses in concrete, 75 lb. per square inch; concrete in direct compression, 500 lb. per square inch; tensile stresses in steel, 16,000 lb.



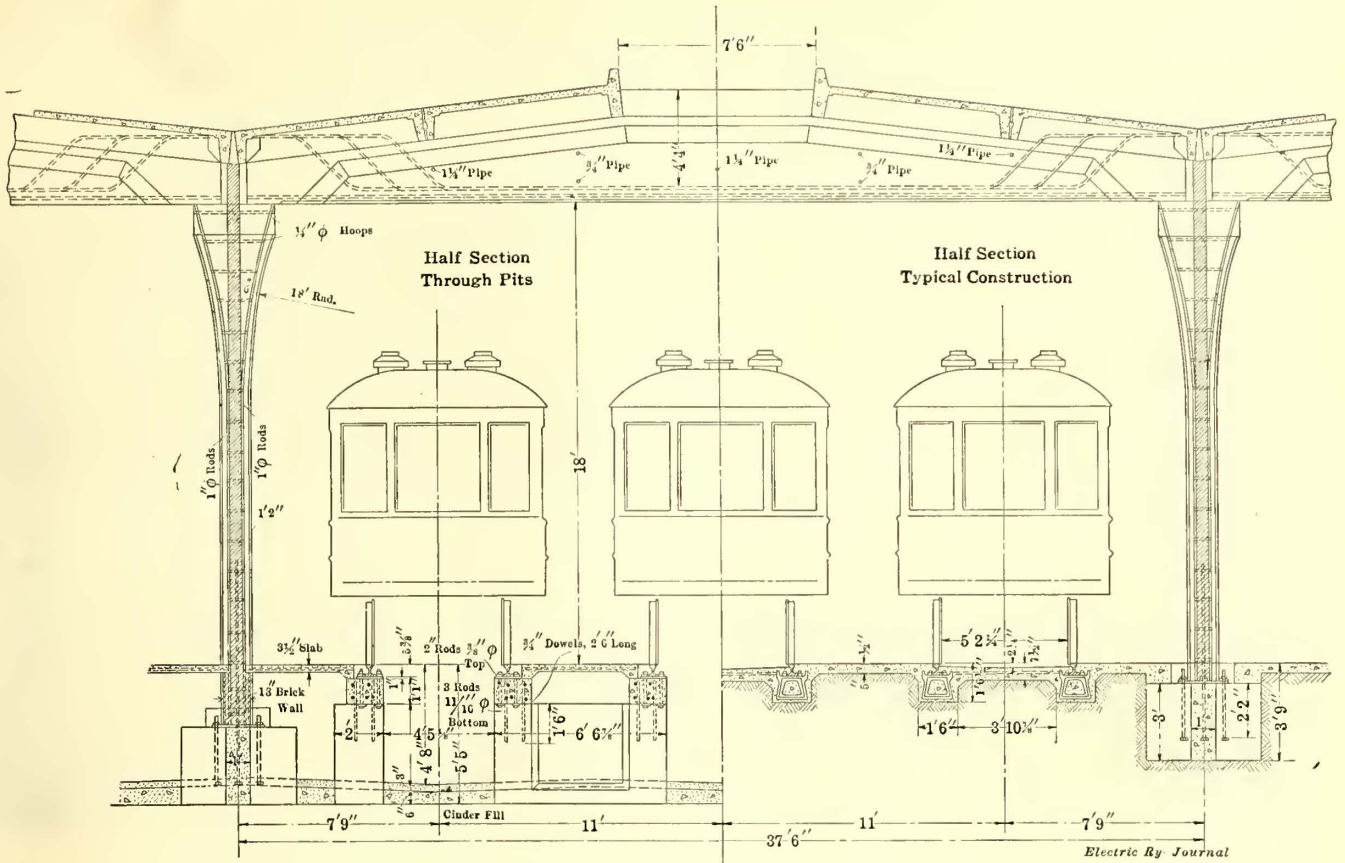
Luzerne Carhouse—Part Plan, Showing Utilities Buildings at the Rear of the Carhouse

tudinal and two transverse expansion joints were provided. These joints extend entirely through the building. The members are arranged on rollers so that a movement of several inches may be taken care of without difficulty.

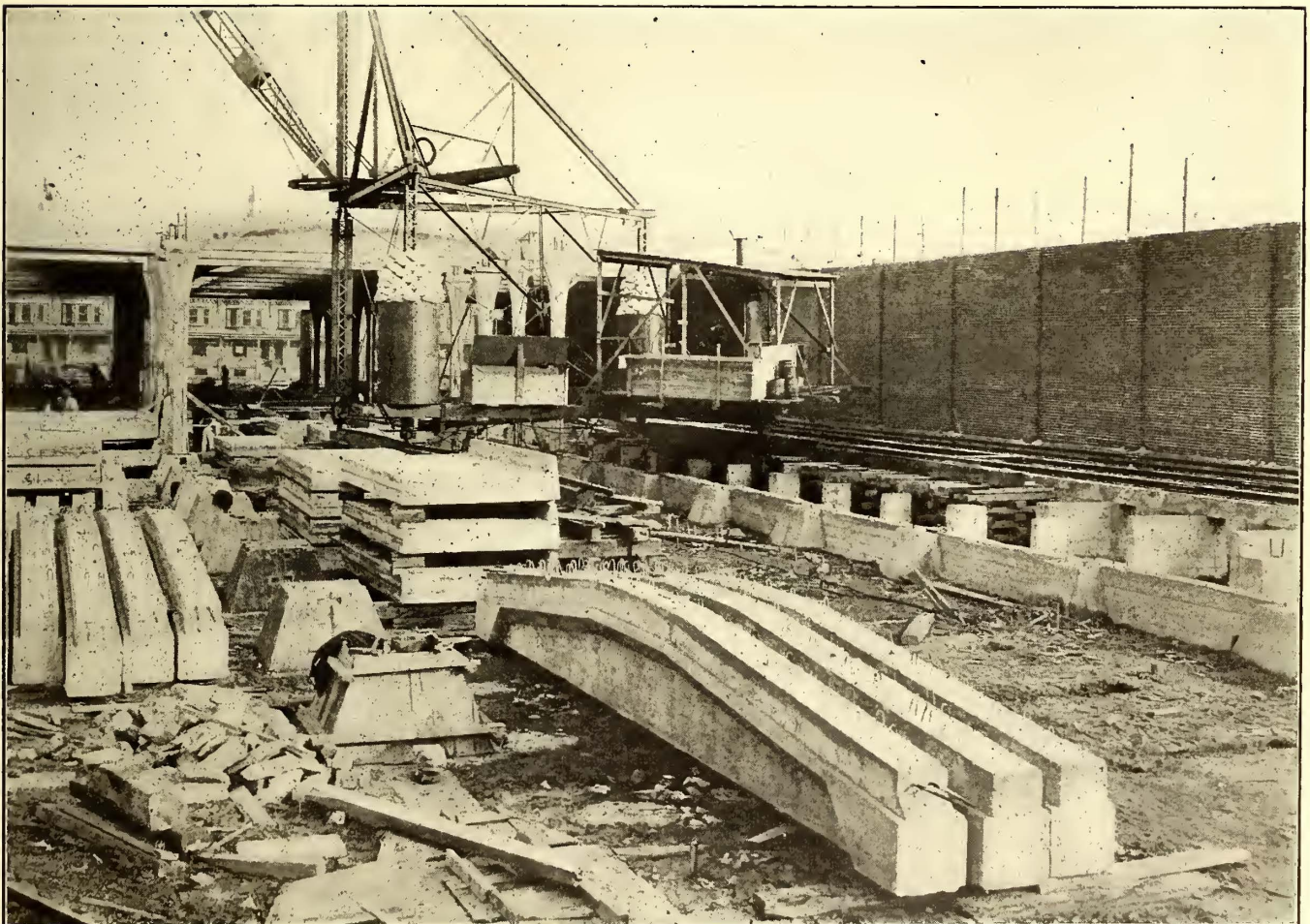
per square inch; shearing stresses in steel, 10,000 lb. per square inch. The concrete for the members named was a wet mixture of one bag Portland cement, 2 cu. ft. of coarse sand or gravel and 4 ft. of broken stone.

Two steel stiff-leg derricks, each mounted on a steel tower as illustrated, were used for erection. Three bays

Mass or monolithic concrete was used only for footings and floors. The concrete floors consist of cinder con-



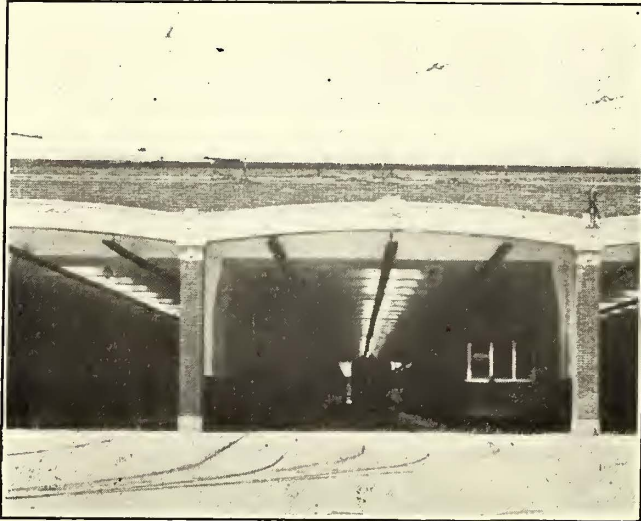
Luzerne Carhouse—Typical Construction of Pit and Flush Sections of the Inspection Bays



Luzerne Carhouse—Stiff-leg Derrick in Use to Install Unit Reinforced Concrete Girders, Columns and Slabs After They Had Been Formed on the Ground

crete and 1 in. of surfacing cement concrete. The remaining construction material consists of brick walls with granite base courses and terra cotta trim, four-ply felt and slag roof covering and bay partitions of 6-in. hollow tile. Inside communication from bay to bay is afforded by means of Underwriters' type sliding doors.

The tracks in the flush sections of the carhouse are mounted on chairs as shown, but the pit rails in the pit section are bolted through plates to 17-in. x 13-in. concrete stringers which were designed for loads of 4700 lb. per wheel. These stringers in turn are carried on concrete

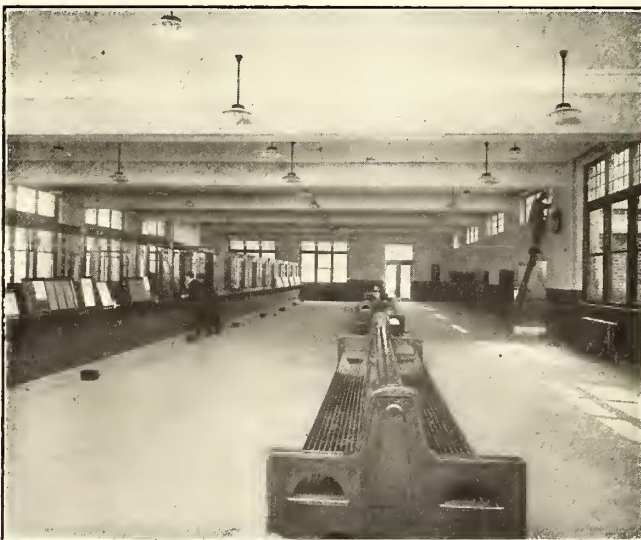


Luzerne Carhouse—Typical Arch and Bay

piers placed 9 ft. 3 in. centers. The pits are 3 ft. deep in the clear. The outer side of each pit rail is concreted flush with the head, while on the inner side the concrete slopes down to a point just below the head to prevent the accumulation of rubbish on the rail. In the shop bay the inner side of the rail was not grouted in order to permit planks to be placed between the rails.

LIGHTING, VENTILATION, WASHING, SHOPS, FIRE PROTECTION, ETC.

Each bay is well lighted by a centrally placed wired-glass unit skylight 7 ft. 6 in. wide and extending the entire

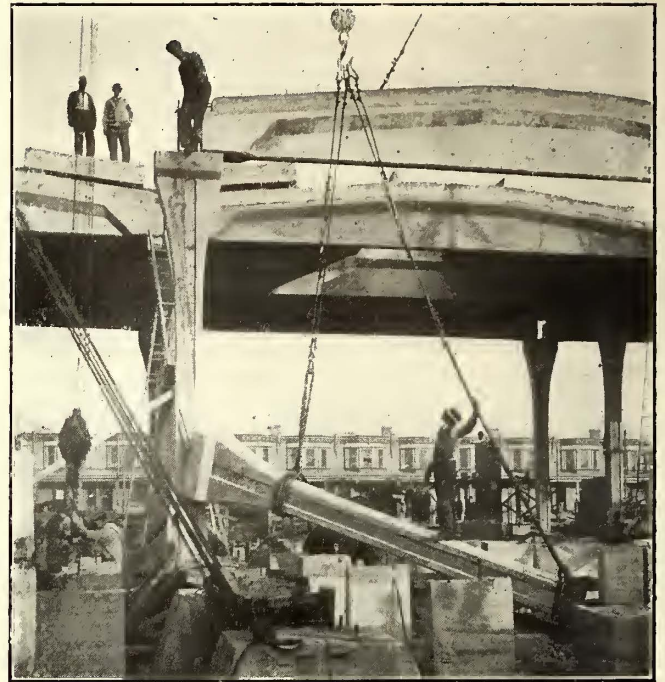


Luzerne Carhouse—Men's Reporting Room

length with steel-sash ventilating monitors at regular intervals. The light appearance of the interior has been greatly enhanced by whitewashing the ceiling and also the walls above a black wainscoting 5 ft. 6 in. high. The artificial lighting for each bay is furnished by ten mag-

netite 600-cp arc lamps. These lamps operate 110 hours on one trimming. The pit lighting consists of incandescent lamps under the devil-strips in addition to emergency sockets. All lighting wires are in conduit.

As previously noted, the inspection bays have no doors



Luzerne Carhouse—Placing a Column

and consequently they are not heated. It will, however, be a simple matter to wash cars in the coldest weather owing to the fact that warm water will be supplied by means of a pump in the basement of the stock building. The pipes terminate in covered outlets in the devil-strips. Ample drains have been installed, of course, to insure quick drainage of floors and pits.

The three-track repair bay is furnished with girder rails for two 5-ton Sellers cranes. Cranes are required because the near-side cars are furnished with solid-frame inter-pole motors. An operating convenience which avoids fre-



Luzerne Carhouse—Receivers' Office

quent opening of the track doors and saves time in securing supplies is the supply tunnel between one of the tracks and the storeroom basement. Besides the track for the supply trucks, this tunnel serves for the water, sewer and steam lines. A much longer concrete tunnel is in service between



the stock building as indicated on one of the plans. These tunnels necessitated little excavation as they were constructed before the surfacing of the property.

SAND SUPPLY, FIRE PROTECTION, ETC.

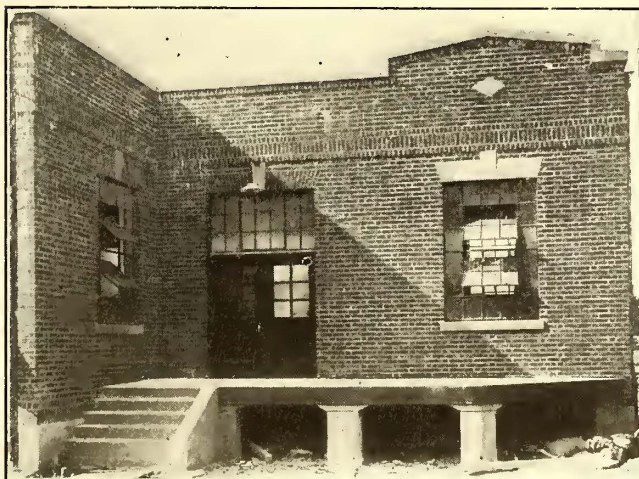
An elaborate sand-storage and distributing equipment



Luzerne Carhouse—Sand Spout Supplied from Storage Bin Above

has been installed to make it easy for the crews to fill their boxes with clean sand in the shortest possible time and without placing cumbersome rubbish-gathering bins throughout the building. For this purpose the company built a sand house where the sand brought from the drying plant in hopper-bottomed cars is dumped and then raised by a motor-driven bucket elevator to a Robins belt conveyor which distributes its load throughout the sand-handling panel extending across the rear of the carhouse. This panel is 16 ft. wide and is lighted by means of steel-sash windows in the rear wall. Outlets from the bottom of the sand storage are provided at the partition walls with a supply pipe for each side of the partition. To obtain sand, it is necessary only to raise the weighted valve, as illustrated, and the sand receptacle will be filled almost instantly.

The fireproof construction of this carhouse, its division into sections storing a maximum of thirty-nine cars, and the possibility of taking cars out in either direction, made sprinklers and standpipes appear a needless expense. Such



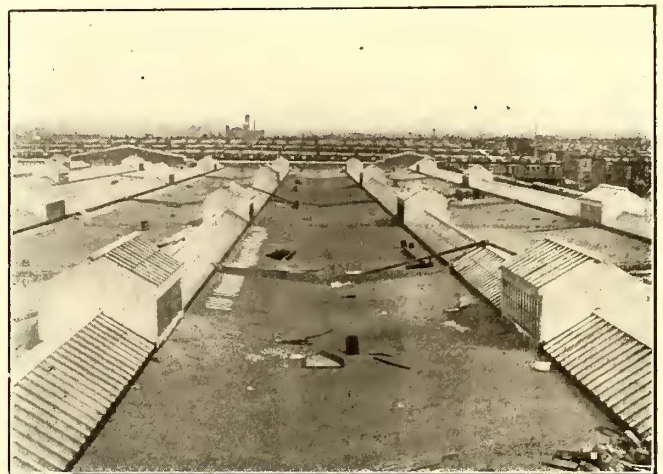
Luzerne Carhouse—Unloading Platform of Stock Building

small fires as may occur will be cared for by means of Waggoner fire pails with non-freezing mixture and "Electrene" dwarf-type fire extinguishers. An alarm gong system has also been provided for calling the fire-fighting corps.

UTILITY BUILDINGS

The utility buildings, except the boiler house, are of hollow-tile and steel construction, the latter being made of hollow blocks and a cement tile roof on steel trusses. In the stock building extensive use is made of steel-framed wire-glass sash and other fireproof fixtures. This one-story building is located directly behind the repair bay of the carhouse, and it is furnished with a platform on which supplies are delivered from cars. The basement now contains an air compressor, the warm-water pump previously mentioned and Darby individual ventilated lockers for the shop employees. These lockers have a sloped top so that they cannot be used as racks or for packages. The main floor has an oil storeroom, shop, stockroom, foreman's office and toilet.

The oil-room storage equipment is above ground level and consists of three 125-gal. and two 25-gal. tanks for handling barrels. The small shop now contains only the switchboard for this installation, but its walls carry crane rails and the floor has a trapdoor to permit the later installation of substation machinery in the basement. The stockroom is screened almost to the ceiling and its one door is readily seen from the foreman's office. The toilet fittings are of the best nicked design with individual wash-



Luzerne Carhouse—View of Roof Showing Skylights and Ventilating Monitors

stands instead of long troughs. Sanitary drinking fountains are used both here and in the office or transportation building.

The office building is a two-story structure directly in line with the stock building. The first floor is divided into an office for the clerks and receivers and a large room for the use of motormen and conductors. As it would be inconvenient to post the runs and schedules of so many lines on the walls, racks with swinging panels are used for that purpose. A barber shop and toilet room are installed in the one-story wing. The toilet is of the finest style with nicked trimmings, marble barriers, etc., and with separate skylights and ventilators.

The heating plant is located at a considerable distance from the other utility buildings in order to be alongside the Philadelphia & Reading Railway. The steam-raising equipment consists of six water-tube boilers which were removed from one of the power houses. Hopper-bottom cars dump coal directly into the basement, while ashes are removed by wagons via a basement roadway.

The Nashville Railway & Light Company makes it a rule to bring old pole butts to its wood shop. Here they are cut into flooring or sheathing which may be utilized by the various departments of this property, thus affording a considerable saving.

# Annual Meeting of the New York Electric Railway Association

The Convention at Brighton Beach on June 24-25 Was the Largest in the History of the Association—A Report Is Published of the Proceedings and of the Banquet

The thirty-first annual convention of the New York State Electric Railway Association was held at Brighton Beach, N. Y., on June 24 and 25. The attendance is believed to have been the greatest in the history of the association. Some 350 delegates registered, and of these more than 300 were at the banquet on Tuesday night, June 24.

## TUESDAY'S SESSIONS

The session on Tuesday morning was called to order at 11.30 a.m. by President Collins, who stated that no annual meeting of the association had been held in the vicinity of New York City or even below Albany since 1899. The great attendance, however, vindicated the judgment of the executive committee in deciding to hold the 1913 convention at Brighton Beach. Although the past year had been one of general prosperity, the electric railways had failed to show any increase in net earnings. There was a common interest among electric railways which could be fostered and protected only by concerted action such as was offered by membership in an electric railway body. Despite the fact that the New York Association had started the past year handicapped by the loss of four of its larger companies, it had enjoyed a very prosperous and progressive year.

The secretary and treasurer's annual report, which was the next order of business, showed the following: Total receipts, \$7,228.91; disbursements, \$4,535.01; balance on hand, \$2,693.90; active members, twenty-one; associate members, ten (a gain of four); allied members, eighty-nine (a gain of five). The chair then read a communication from W. G. Gove, superintendent of equipment Brooklyn Rapid Transit Company, inviting the delegates to inspect the exhibit on the tracks behind the hotel, comprising various types of surface and elevated cars as well as of electric locomotives and freight cars used by the Brooklyn Rapid Transit System.

## CONSTRUCTION OF TIMETABLES AND SCHEDULES

The only paper read at the morning session was that on "Construction of Timetables and Schedules," by J. J. Dempsey, superintendent of transportation New York Consolidated Railroad, Brooklyn. This paper is published on another page. After concluding his paper Mr. Dempsey spoke of the method of traffic tabulation followed in Brooklyn. Men were stationed to get the number of passengers on cars at the points of maximum loading and also in the sparsely settled sections, and these figures determine the kind of service that would avoid an unnecessary number of through cars. The company made it a practice never to have a run exceed fourteen hours.

J. K. Choate, vice-president The J. G. White Management Corporation, believed that Mr. Dempsey's analysis of schedules had saved the Brooklyn company \$250,000 in one year. A great many interurban railroads wasted money by running a car a long distance without any passengers, the load being heavy only in the middle of the run.

J. F. Hamilton, general manager United Traction Company, Albany, thoroughly appreciated Mr. Dempsey's work and said that he was now rearranging his schedules on the same principles.

J. P. Barnes, manager Syracuse & Suburban Railroad, spoke from the shop end of the question. The difficulty most master mechanics found was to get the cars into the shop for the periodical overhauling at the right time. Perhaps a better analysis of schedule conditions would often

permit the equipment, barring accidents, to be cared for between the morning and evening rush hours.

P. V. See, superintendent car equipment Hudson & Manhattan Railroad, said that on some of the systems with which he had been formerly connected the transportation department always wanted to keep the larger and newer cars on the road so that the only time left to inspect such equipment was under the disadvantageous conditions incident to night work.

Mr. Barnes, however, believed that the transportation department should not be blamed for favoring the best cars. The drawbacks of night inspection could be greatly minimized by liberal pit and carhouse lighting and also by making the working quarters more comfortable.

Mr. Dempsey said that his cars were inspected on a mileage basis and were turned over to the mechanical department in accordance with the shop schedules of the latter. The cars were so routed that they would be traveling toward the shop on completing the morning rush hour so that the time saved was enough to permit them to be ready for the evening rush hour of the same day.

J. H. Barnard, engineer The J. G. White Engineering Corporation, brought up the question of night schedules on outlying lines. Mr. Dempsey had mentioned the interest charges which come up on other equipment in connection with extra cars. In operating many lines it was customary to cut down the service on outlying lines very materially after some arbitrarily fixed time. Thus many people were discouraged from locating in the outer districts. The addition of a few cars to a line added practically no expense except platform labor and power. The point was overlooked that these additional car miles do not cost as much as the original car miles. In fact, if the "owl" car service paid for platform wages and power it could be considered profitable for it encouraged the settlement of people who would necessarily use the service much oftener than if they lived in or near town.

H. W. Blake, editor ELECTRIC RAILWAY JOURNAL, described the method of taking traffic counts worked out jointly by the Philadelphia Transit Commission and the Philadelphia Rapid Transit Company in connection with the new rapid transit plan. The city was divided into more than 100 districts, and to each a number was given. The purpose of the count was to show not only where the traffic originated but also where it was distributed—a problem which had never before been investigated. Passengers received blanks when they boarded the car on which they were asked to indicate their destination. The data thus secured were tabulated on machines according to many classifications, such as districts, routes, transfers, etc.

Mr. Barnes found that some interurban runs were so laid out that the longest layovers were at the terminals with the poorest inspection facilities. A heart-to-heart talk between the transportation and mechanical heads about such cases would often effect a betterment.

In reply to a question by John Sibbald, master mechanic Fonda, Johnstown & Gloversville Railroad, Mr. Dempsey said that car movements on heavy days were anticipated by records of past holiday business under given weather conditions and that a reasonable increase for growth of business was also made.

## MISCELLANEOUS BUSINESS

B. Penoyer, engineer maintenance of way Schenectady

Railway, who is chairman of the committee on joint use of poles, said that this committee had held no meeting during the past year as the report made last year on this subject had been referred for further action to the American Electric Railway Association.

As chairman of the committee on membership, Mr. Choate reported that while the association had been unfortunate in losing the Buffalo & Lake Erie Traction Company, it had gained the Brooklyn Rapid Transit Company and hoped to have the Hudson & Manhattan Railroad enter the association in the near future. Some out-of-state railways adjacent to New York had also exhibited a desire to become members.

Secretary Dietz then announced the entertainment program for Tuesday and Wednesday as noted in last week's issue.

FREIGHT AND EXPRESS BUSINESS

The first order of business at the afternoon session was the paper on "Freight and Express Business on Electric Railways," by Frank Walsh, superintendent Electric Express Company, Schenectady. It is published herewith.

In discussing this paper, Mr. Barnes expressed the opinion that electric express waybills and other forms should be reviewed to obtain uniformity. Those who had tried to handle interline shipments realized the confusion due to different waybills and shipping contract conditions. Electric express and interline business would be greatly encouraged by improvements of this character.

Mr. Choate was very doubtful whether it would be possible to make an independent classification of freight business, but thought it was feasible for purely express business. On his former road, the Otsego & Herkimer Railroad, carload and less-than-carload business was handled as

TABLE I—INCREASED EARNINGS ON THE INTERBOROUGH RAPID TRANSIT COMPANY DUE TO INTRODUCTION OF PIECE WORK

Skilled Labor:	Average Day Rate	Number of Men	Piece Work Earning	Amount Increase	Per Cent Increase
Carpenters .....	\$2.64	47	\$3.34	\$0.70	27
Painters .....	2.42	43	3.26	0.84	35
Machinists .....	2.53	58	3.27	0.74	29
Upholsterers .....	2.40	3	3.13	0.73	34
Boilermakers .....	2.50	3	3.64	1.14	49
Average increase for skilled labor, 29.3 per cent.					
Unskilled Labor:					
Carpenters' helpers.....	\$2.00	12	\$2.59	\$0.59	29½
Painters' helpers.....	1.75	40	2.38	0.63	36
Wiremen's helpers.....	1.93	32	2.26	0.33	17
Machinists' helpers.....	1.90	58	2.26	0.36	19
Boilermakers' helpers.....	2.00	1	2.25	0.25	12
Shop helpers.....	1.85	15	2.33	0.48	26
Car cleaners.....	1.70	158	2.05	0.35	20
Laborers .....	1.75	6	2.25	0.50	28
Average increase for unskilled labor, 22.25 per cent.					

on a steam railroad while the express business was handled by the old-line company. Mr. Choate believed that even in cities with congested traffic a profitable express business could be carried on during the night hours. He suggested that it was within the province of the American Electric Railway Association to make a standard classification and inventory of shipping and billing forms.

OPERATING ECONOMIES

The next order of business was a paper on "Operating Economies," prepared jointly by J. S. Doyle, superintendent car equipment Interborough Rapid Transit Company; W. G. Gove, superintendent equipment Brooklyn Rapid Transit Company, and J. S. McWhirter, superintendent car equipment Third Avenue Railway. The paper was read by Mr. Gove, who stated also that his company had modernized old machines at small expense to handle very heavy maintenance and renewals. Referring to brakeshoe records, he said that for the last eighteen months the brakeshoes on the Brooklyn system had shown very close to 80 per cent efficiency in wear.

Mr. Doyle said that the main point was to circulate knowledge of these and other operating economies among the members and particularly among the smaller companies which did not enjoy the advantages of statistical bureaus. He suggested that a statistician be appointed to devote, say,

two months a year to gathering and analyzing operating data. He then presented the accompanying Tables I and II, which show the increased earnings of workmen on the Interborough and New York Railway systems due to the introduction of piece work. Mr. Doyle also mentioned that on the subway lines alone coasting recorders had made an energy saving of about 14 per cent, equivalent to \$1,200 a day.

TABLE II—INCREASED EARNINGS ON NEW YORK RAILWAYS DUE TO INTRODUCTION OF PIECE WORK

Skilled Labor:	Average Daily Rate	Average No. of Men	Average Piece Work Rate	Amount Increase	Per Cent Increase
Carpenters .....	\$2.53	31	\$3.33	\$0.80	32
Painters .....	2.39	17	3.09	0.70	29
Wiremen .....	2.51	8	3.13	0.62	26
Brakemen .....	2.25	2	2.46	0.21	9
Truckmen .....	2.42	6	2.50	0.08	3
Overhaulers .....	2.42	6	2.51	0.09	3.7
Machinists .....	2.63	6	2.98	0.35	13
Wheelguard repairers.....	2.08	3	2.55	0.47	22
Pipe fitters.....	2.50	10	3.10	0.60	24
Average .....					
Unskilled Labor:					
Painters' helpers.....	\$1.80	10	\$2.36	\$0.56	31
Carpenters' helpers.....	1.84	5	2.42	0.58	31.5
Truckmen's helpers.....	2.00	6	2.02	0.02	1
Shop helpers.....	1.60	2	1.97	0.37	23
Wiremen's helpers.....	1.69	4	2.46	0.77	45.5
Machinists' helpers.....	2.00	16	2.17	0.17	8.5
Pipe fitters' helpers.....	2.00	1	2.27	0.27	13.5
Car cleaners.....	1.60	67	1.86	0.26	16
Jackers .....	1.87	6	2.40	0.53	28
Controller men.....	1.79	12	2.14	0.35	19.5
Plowmen .....	1.78	3	1.83	0.05	2.8
Field repairers.....	1.43	8	1.73	0.30	21
Average increase for months of Sept., Oct. and Nov., 1912....					
					18

Mr. McWhirter then briefly discussed the welding and prepayment figures given in the paper.

In reply to Mr. Barnes, Mr. Doyle said that the increases represented by the Interborough figures were about equal to increases in outside day rates, but although the Interborough rates were now seven years old the men appeared to be well satisfied. They realized that the continuity of inside work was a great advantage to them even if the daily earnings were about the same. Again, the employees had no carfare to pay, and company stores enabled them to buy their groceries at a great saving over retail prices. Replying to Mr. Sibbald, Mr. Doyle said that the choice as to piece-work or bonus systems depended upon the character of the work. If it was permanent, piece work should be used, but if of irregular character, as in construction jobs, the bonus system was preferable.

Referring to car design economies, C. G. Young, consulting engineer, New York, described the light-weight trolley cars which had been constructed by the Federal Storage Battery Car Company for the Panama Tramways, in accordance with his designs and those of the car builder. Each of the fifteen cars is 30 ft. over all, has four 10-hp motors, seats thirty people and weighs but 14,000 lb. There are four motors, each geared directly to a wheel, and these in turn have Rollway bearings. All guarantees of economies had been borne out by the tests made, and he was satisfied that the saving in energy would pay for the interest, depreciation and upkeep of the special features, even if energy was purchased at 2½ cents per kw-hr. instead of 3 cents per kw-hr. as was actually the case.

Mr. Choate indorsed Mr. Doyle's suggestion as to the distribution of information. He believed the coming year would inaugurate some systematic method of getting the committees to do more specialized work. As for his company, it desired to co-operate by every means in its power.

Mr. See suggested that comparisons of cost would be much more valuable if made on a common basis. Such a plan had already been worked out to advantage by the engineers of some large New York power stations. He had found the bonus system applicable to very small jobs, even where not more than forty to fifty operations were involved. One great advantage of bonus or piece-work systems was that since the foreman did not have to spend

any time checking the men could give more attention to the quality of the work.

#### MAXIMUM TRACTION TRUCKS VERSUS M. C. B. TRUCKS

The next paper was on "Maximum Traction Trucks versus M. C. B. Trucks for City and Suburban Service," by H. A. Benedict, mechanical engineer Public Service Railway, Newark, N. J. This paper was read by the secretary, but there was no discussion as Mr. Benedict was not able to be on hand.

#### LINE CONSTRUCTION

Mr. Barnard then read a paper entitled "The Proper Location of Trolley Wires on Curves and Corresponding Location of Overhead Frogs." This paper is presented elsewhere in this issue. In concluding his paper, he said that while the method might seem theoretical, it had been applied to difficult conditions with a consequent elimination of much wheel and wire trouble. It should be as easy to teach a line foreman to lay out overhead construction along these scientific lines as it was to teach a track foreman the layout of spirals.

F. A. Bagg, chief engineer Fonda, Johnstown & Gloversville Railroad, stated that he was so much impressed with Mr. Barnard's clear analysis that he would be glad to follow his instructions in work on his own property. Much needless trouble and expense was caused by the improper location of line and frogs. The paper afforded another opportunity for operating economies.

In reply to a question, Mr. Barnard said that slight corrections might have to be made for the superelevation of the rails, but ordinarily the outside rail laid in city pavements did not have much elevation. One point which followed from his analysis was the angle of frog. He had seen advertised in various catalogs frogs of angles from 3 deg. to 20 deg., but with correct design it was not necessary to have a frog of more than 10 deg. for any kind of trolley work.

In concluding the discussion, Mr. Collins said that while many points brought up in the meetings of the association had been adopted by the members, additional good would follow from some system of checking up the adoption of operating economies. He then appointed as a nominating committee Past-presidents Choate, Allen, Shannahan, Peck, Fassett and Danforth. Upon this the meeting was adjourned, after a vote of thanks had been extended to the Brooklyn Rapid Transit Company for its courtesies in connection with the convention. At the suggestion of President Collins the members visited the company's car exhibit in a body.

#### WEDNESDAY'S SESSION

The session on Wednesday morning was called to order about 10.30 by President Collins, who announced that the first paper on the program was that by N. W. Bolen, superintendent of transportation Public Service Railway, and was entitled "Relations Which Should Exist Between the Railway Companies and Their Employees." The report was read by the secretary and will be found on another page in this issue.

The president opened the discussion by complimenting highly the author of the paper and said he hoped that it would be fully discussed.

John H. Barnard, engineer J. G. White Engineering Corporation, moved that the association tender a vote of thanks to the author of the paper for his contribution. He said that it was full of ideas and that the paper should be taken home, read, marked, learned and inwardly digested. He was particularly impressed with the suggestion made by the author that the general manager should impress his personality on those immediately subordinate to him and that they should do the same with others reporting to them in the service. He believed that the position of motorman was much more agreeable than that of a conductor who had to take all the criticisms of the public. After all, the public

was made up simply of an aggregation of individuals, and if the conductors were courteous to their passengers he believed that this courtesy would be returned by the public to the company. He referred to the practice of the American Telegraph & Telephone Company in posting up in its exchanges for the instruction of the operators the words: "A smiling voice wins."

Mr. Bolen said he believed that a very important part of the relations between the management and the employees was the method of discharging men. His experience was that superintendents of divisions often acted very brusquely in this duty. He recalled that in 1903 when he first went over one of the lines which now constitute the Public Service Railway he was taken around by the man who was then superintendent of that line. They passed a number of trainmen in uniform, and the speaker noticed that the superintendent did not speak to them. He asked whether these men did not belong to the line being inspected, and the superintendent said that they did but that he did not speak to them because he believed in the policy of keeping the men where they belonged. During the course of the trip Mr. Bolen and the superintendent visited one carhouse, where the superintendent dismissed seven men with a curse and the statement that the company did not need their services any longer. It is needless to say that this treatment has been radically changed on the line in question. No one need expect employees to be courteous unless the management is courteous to them. Mr. Bolen cited instances where he had made strong friends even among men whom he had dismissed from the service by his treatment of them at that time. They had come to him later, saying that they appreciated the words which he said to them when he had dismissed them and that they were better men for his words of advice at that time.

William H. Hyland, claim agent Fonda, Johnstown & Gloversville Railway, said that before occupying his present position he had been a conductor and had served in that capacity for thirty years and that he appreciated the difficulties of the position. It was not sufficient simply to teach the conductor to do good work and be courteous. He believed that when a new man came on the line and was being broken in he should be taught above all things the value of honesty. The temptations to be dishonest were great, and often the men who succumbed to this temptation were most desirable in other ways, as in the avoidance of accidents. Very often the public urged the conductors to appropriate fares. The men often had to work seven days during a week, and this debarred them from attending any public religious services. The speaker said that many companies held smokers and other meetings for their men at which every topic was discussed except that of ethics. This should also be considered. The fact should be borne in mind, also, that many of the new men enter the service after having left homes where there had been religious instruction and that they were thus suddenly transferred into an employment where the subject was never mentioned. He believed that it was desirable to talk about the matter occasionally and that no time was better than when the instructor was breaking in a new man.

Mr. Bolen agreed with the preceding speaker and went on to say that the supervisors of the carhouses of the Public Service Railway at least once a month talk with the instructors of new men and tell them what is needed. The question of the employees' honesty was an important one, and much depended on starting out with friendly relations with the man and giving him friendly answers to any question he might ask, instead of snapping out a command to see some one else. Since the general use of automobiles, officials do not have the same opportunity of inspecting the men at work as when they rode around the lines on the cars and were pointed out as the officers of the company.

E. T. Munger, formerly general manager Hudson &

Manhattan Railroad, stated that in his experience one thing that invariably made the men feel good was to give to them a sort of semi-military salute. He often talked to the men, also, and they showed their appreciation by their courtesy both to himself and to his wife, whom they took the trouble to learn to recognize. Mr. Munger believed that the men respond to right treatment. He also spoke of his practice in forming opinions of men coming before him, a practice taught by a banker, of looking at a man as he came into the office sideways. This gave him the first look, and this first opinion was helpful. Mr. Munger said that in the method followed when he was connected with the Hudson & Manhattan Railroad men seeking employment went first to the superintendent of transportation, who sent a record of the man to the general manager's office with a note of the findings. Most of the men came to see the general manager, and the speaker could usually tell in a minute whether he wanted them or not. If so, he gave them a few words of advice; if not, he wrote "no" on the record. The question of politics was never allowed to affect the hiring of men.

James F. Hamilton, general manager United Traction Company, Albany, congratulated Mr. Bolen on his paper, and President Collins said that he was impressed with its character and would appreciate a copy. He said that he would ask the new management to have the paper printed and sent to all members of the association.

#### STANDARD METHODS IN THE MECHANICAL DEPARTMENT

Following this discussion a paper entitled "Standard Methods for the Mechanical Department," published elsewhere in this issue, was read by John Sibbald, master mechanic Fonda, Johnstown & Gloversville Railway, Gloversville, N. Y.

In commenting upon this J. P. Barnes, Syracuse & Suburban Railroad, said that he was extremely interested in the plan outlined. He thought the idea of foremen's meetings was generally followed. On his own road minutes were taken and the notes were distributed among those in attendance to aid in future discussion, but the method proposed by Mr. Sibbald of putting in the form of definite rules the results of the foremen's experience was a very good and practical way of getting the greatest good out of the meetings.

#### QUESTION BOX

The attention of the meeting was next turned to the Question Box. Several of the questions were passed over because of non-discussion, but from some of the others interesting information was evolved.

On the question of the value of having a steel wire, grounded at short intervals, carried on top of the pole line carrying a high-tension transmission line through a country that is subject to frequent electrical disturbances, C. G. Young stated that a great deal of trouble would be had with the steel wire rusting. Such a wire should be used, but it should be of heavy iron, phosphor-bronze or hard-drawn copper.

Mr. Barnard said that it was not the practice of his office to use steel wire, for although his firm was a great believer in this method of protection, yet he did not believe in steel. Galvanizing it, moreover, added not much to its usefulness. For such purposes they use a 7/32-in. copper-clad wire for 150-ft. spans, sometimes three No. 10 wires stranded together, and for long spans up to 500 ft. a 5/16-in. seven-strand copper-clad wire.

Mr. Barnes defended the use of a galvanized steel wire and stated that on the line from Niagara to Syracuse 3/8-in. double-galvanized steel cables, with spans from 100 ft. to 400 ft., have been in use since 1906 and that samples taken in 1912 showed no deterioration, although in some places they were taken from sections not more than 40 ft. away from blast furnaces.

In discussing the comparative values of leather and rat-

tan coverings for seats in interurban cars, Mr. Sibbald thought leather prohibitive on account of the cost but that imitation leather was better than rattan. It was more sanitary, easier to apply and offered less temptation to penknife cutting. Mr. Barnes said that his company used leather in the smoking compartment and plush for the other sections of some cars in use for some six years. Recently he had examined the leather seats and had found that the leather needed renewal. Part of the wear had undoubtedly come from the feet of passengers. Rattan was objectionable for interurban use, especially in the case of seats with no outside arms, because it was slippery. On the whole, according to Mr. Barnes, imitation leather was the best covering.

In regard to whether the mechanical department or the operating department should be responsible for the work of cleaning the cars, Mr. Sibbald was in favor of the former, as was also Mr. Munger. The latter gave as his reason the fact that if the transportation department handles the cleaning it will not report complaints, but that if the mechanical department cleans, the operating department will very soon report any dereliction of duty.

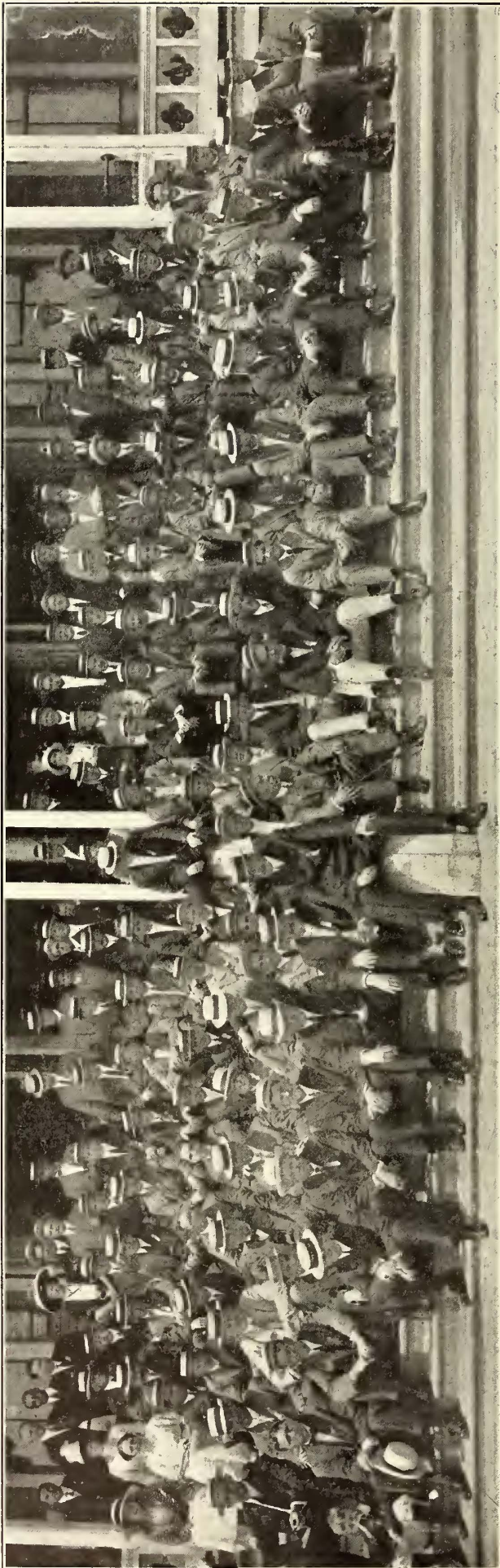
In discussing the question of the advisability of automatic switches F. A. Bagg, chief engineer Fonda, Johnstown & Gloversville Railway, pointed out that to the cost of the hand switch should be added the cost of making the stop. Recent investigations had shown that this could be given a definite value. Mr. Barnes pointed out that with the automatic switch the motorman might have a tendency to enter the switch section with both current and brakes on, to be sure to throw the switch, and that the wear and tear might be more than the cost of the stop. In his opinion the chief value of the automatic switch was that it did not require either trainman to leave the car.

The use of spar varnish as a paint preservative next provoked discussion, and Mr. Barnes pointed out that in the total cost of painting the cost of material was a very small part and therefore the best material was advisable. Cheap material was not only costly in the long run itself, but it detracted from the appearance of the cars and thus lowered the advertising efficiency of the rolling stock. Mr. Sibbald had had no experience with spar varnish, but thought that one application a year ought to be enough, and frequently one in eighteen months. Mr. Fassett stated that if cars had to be varnished twice a year the roads would have to charge a 6-cent fare.

In discussing question No. 11 Mr. Callaghan stated that with twenty-five cars in Rochester with maximum traction trucks with the pony wheels on the outside no derailments due to snow had occurred. The rest of the discussion was to the effect that each method of placing maximum traction trucks had certain advantages.

F. A. Bagg, chief engineer of the Fonda, Johnstown & Gloversville Railway, in discussing a fair maintenance cost per mile of line for the distribution system, said that from \$110 to \$150 a mile was proper. Mr. Young said that it all depended on the efficiency of the upkeep, the number of wires, kind of poles, etc., but that generally the cost was within \$150 a mile. Mr. Fassett submitted a word of advice to the effect that the reports of the Public Service Commission, compiled, he said, at great cost to the companies, might be of use on this question.

Harlow C. Clark, of the American Association office, the first speaker on the desirability of publicity work, stated that the public has a right to know about all changes and that it is very proper and important to notify them. The manner of so doing varies with the case, but Mr. Clark thought that one good way of making announcements was in the company's own cars, to be followed later by any other announcements if necessary. Mr. Barnes thought that all changes should be explained to the conductors, so that they could courteously explain them to the public if inquiries were made of them.



Group View of Delegates at the Convention of the New York Electric Railway Association

#### ELECTION OF OFFICERS

At this point in the meeting the discussion was closed, and Mr. Fassett, for the nominating committee, presented the following ticket for the ensuing year:

For president, Frank Hedley, vice-president and general manager Interborough Rapid Transit Company, New York City.

For first vice-president, James F. Hamilton, general manager United Traction Company, Albany, and Schenectady Railway Company, Schenectady.

For second vice-president, Stuart Wilder, vice-president and general manager Peekskill Lighting & Railroad Company, Mount Vernon.

For members of executive committee, James P. Barnes, general manager Syracuse & Suburban Railroad Company; J. J. Dempsey, superintendent of transportation Brooklyn Rapid Transit Company; S. W. Mower, general manager, Otsego & Herkimer Railroad Company, Cooperstown; Wilbur C. Fisk, president Hudson & Manhattan Railroad, New York City.

For secretary and treasurer, Charles C. Dietz, Albany.

Before calling for a vote President Collins acknowledged the assistance he had received this year from both the members of the association and the allied manufacturers. Thanks were expressed to the Brooklyn Rapid Transit Company for its exhibition and to the hotel management for the accommodations received. In reviewing the year's work President Collins said that the large delegation, the increased interest shown and the new companies enrolled during the year were promising of increased success during the next year, and also that the association was glad to have the increasing support of the engineering associate members.

On a motion the secretary was instructed to cast a unanimous ballot for the ticket as nominated. In the absence of Mr. Hedley, who had been called to Chicago, Mr. Hamilton was conducted to the chair and, after a resolution of thanks by Mr. Barnard to the outgoing administration, the meeting was adjourned.

#### THE BANQUET

The banquet was held Tuesday evening in the main dining room of the Brighton Beach Hotel and proved a highly enjoyable affair. The entertainment committee, in particular, distinguished itself by providing an elaborate vaudeville entertainment as well as orchestral music.

#### ADDRESS OF JUDGE M'CALL

The first speaker was Hon. Edward E. McCall, chairman Public Service Commission, First District, New York, who made a short address early in the evening because he was obliged to leave. He said that his conception of the duty of the Public Service Commission was that it was organized as much to secure the rights of the companies as to secure the rights of the public and that if the companies felt that they were right in any matter they should not hesitate to express their opinion. He believed that the public service commission form of government would help the railways not only in securing their rights but in increasing the faith of the public in the corporations, both as to their financial matters and the correctness of their operating methods. On behalf of the Public Service Commission, First District, he wished the electric railway companies of the state every success.

#### ADDRESS OF COLONEL WILLIAMS

The next speaker was Colonel T. S. Williams, president of the Brooklyn Rapid Transit Company, who spoke on conditions which confront the electric railways to-day. These were troublous times for public service corporations. In the past an Alexander Hamilton could say, "The people is a great beast," and later a great railroad operator could say, "The public be damned!" Those times had passed, for the people were determined to come into their own. As for himself, he sympathized with the spirit of democ-

racy which was permeating our entire civilization, but he resented the spurious democracy which was bringing so much harm upon the country to-day. The atmosphere of the last few years had brought a great many invertebrates into business and politics. What was needed to-day was more red blood in both of these fields. No matter what evils of the past had attached themselves to politics and business, he could safely say that corporation and other business men to-day were imbued generally with a high idea of honor in their dealings between themselves, with the government and with the public. Judge McCall had uttered an encouraging sentiment when he said, "When you are right do not be afraid to come out and express yourself."

Imbued as electric railway men were with the honesty of their intentions, they should not be afraid to express them both to the public and to public officials. His hope in democracy was such that he felt that if the public was taken into the confidence of the companies and made acquainted with the conditions pertaining to their business, its sympathy would be on the side of the railways instead of on that of the politicians.

#### ADDRESS OF MR. ALLEN

In the unavoidable absence of President Harries of the American Electric Railway Association, C. Loomis Allen spoke on co-operation. The unfortunate conditions in the industry were apparent from the record of new construction, which shows a falling off of 56.4 per cent in the last five years through the practical impossibility of financing new enterprises and the difficulty of securing funds to carry out improvements in properties already existing. The reason for this was found in the attitude of municipal and state governments and of the public toward the railroad—an attitude that was refusing not only to allow legitimate profits to investors but was responsible for the actual confiscation of property rights under pleas which only those of socialistic tendencies could allow to be just. The electric railway industry was under an attack which was not a mere spasmodic expression of unrest but was persistent, almost universal, well-directed and threatened the very existence of the industry. Unless this attack could be met and overcome disaster and ruin were inevitable.

Now, because this warfare was unjust, because it did not rest upon any basis of right and fairness, he was convinced that it could be resisted successfully by intelligent, earnest and indefatigable opposition. This opposition must come from the men whose lifework was involved in the industry. The feeling of the public toward public utilities was evident. A long campaign of misrepresentation had been carried on by men in love with their own sociological and economic ideas, who found in public utility companies, impersonal as they must be, an enemy so supine that arguments went unanswered, that false statements passed without contradiction, that fallacious arguments went unrefuted. It was only through organized effort that the flood of socialistic thought could be stemmed. The executive who though because his particular property was free from attack that it was going to be immune always was shortsighted. It was his duty not only to the industry but to his particular company to enlist in the army of the opposition. What applied to the executive also applied to every man down the line. It was through bodies like the New York Association, which taught the spirit of co-operation, that much could be accomplished toward organizing the opposition. Back of this association and of all similar bodies stood the American Electric Railway Association. In its membership 76 per cent of the electric railway mileage of the country was already represented and it had more than 2500 individual members. It should have 90 or more per cent of the mileage, and its individual membership should increase until it embraced every worker in the electric railway field.

Education of the public in the real facts of the situation

was the back-fire that must be started if the conflagration which threatened the industry was to be overcome. No man need fear the verdict of the American people if that people had before it all the facts in the case. In conclusion, Mr. Allen said that the American Electric Railway Association intended to assist in the education of the public by publishing in sheet form for newspaper use extracts from articles in *Acra*, and that the local electric railways would be asked to assist in the distribution of this material.

#### SPEECH OF MR. VREELAND

In the absence of T. P. Shonts, president Interborough Rapid Transit Company, H. H. Vreeland extended a cordial invitation to the members of the association to take full advantage of that company's records and other data.

#### ADDRESS OF COMMISSIONER DECKER

The next speaker was Martin S. Decker, Public Service Commission, Second District, New York. Mr. Decker spoke of the pleasant relations which existed between his commission and the electric railways under its jurisdiction. He believed that the operation and management of these roads had greatly improved during the past six years. A number had been reorganized, but always to the advantage of the public and the property, although sometimes those in control had first objected. He had no sympathy for the man who attacked a corporation because it was a corporation and little more patience with the corporation manager who resented a complaint merely because a complaint had been made.

There were too many men of the former class still in existence, and he was glad to say that those of the latter were rapidly diminishing in number. Relative to some of the difficulties which confront a public service commission, he mentioned the proposed construction of a 28-mile line which would permit all-electric operation from Albany to Buffalo. Despite favorable traffic possibilities this work had to be postponed on account of the present unfortunate financial situation. In former days the money would have been raised at any cost and the line built, with the resulting impoverishment of its owners. Here then was a case where capital was being protected against itself while the public remained without a much desired transportation facility. He agreed with Mr. Allen that it was incumbent upon electric railways to let the public understand the conditions of the industry so that it would not only realize what has been done for its benefit but would also refrain from asking for unreasonable things.

#### SPEECH OF MR. DUFFY

The banquet was pleasantly concluded by some good stories by C. N. Duffy, vice-president Milwaukee Electric Railway & Light Company.

### HIGH-VOLTAGE LINES IN EUROPE

The March souvenir number of *Elektrotechnik und Maschinenbau*, Vienna, commemorating the twentieth anniversary of that paper, contains the latest tabulation of high-tension electric railways in Europe in addition to a series of historical articles on different branches of electrical development. The table of high-tension d.c. lines shows twenty-one roads, the total length of the seventeen lines whose mileage is given being 438 miles. The line potential ranges from 1000 volts on the Cologne-Bonn line, built in 1906, to 1650 volts on the Arad Hegyalja Railway, built in 1912. The three-phase lines number eight, total 320 miles of track and range from 750 volts, forty cycles, on the Burgdorf-Thun Railway, built in 1899, to 7000 volts, fifteen cycles, on lines of the Italian State Railways, built in 1911. The length of the Valtellina three-phase line, Italy, is about 63 miles, and the three-phase lines of the Italian State Railways are 193 miles long. The single-phase lines number forty-two, the total length of the thirty-phase lines whose mileage is given being 738 miles.

# Papers at the New York Convention

Among the Subjects Considered Were Freight and Express on Electric Roads, Relations Between Employees and Managements, Operating Economies, Alignment of Trolley Wire and Placing of Frogs, Construction of Timetables and Schedules and Choice of Trucks for City and Suburban Service

## OPERATING ECONOMIES

BY J. S. DOYLE, SUPERINTENDENT CAR EQUIPMENT INTERBOROUGH RAPID TRANSIT COMPANY; W. G. GOVE, SUPERINTENDENT EQUIPMENT BROOKLYN RAPID TRANSIT COMPANY, AND J. S. MCWHIRTER, SUPERINTENDENT CAR EQUIPMENT THIRD AVENUE RAILWAY, NEW YORK

Railway association work has contributed its share to the phenomenal development of electric traction throughout the country, and it is confidently expected that this good work will continue for some time to come. Meanwhile, are we taking advantage of the various developments and methods of economical operation? A recapitulation of this all-important subject may be considered the text of this paper.

Is it not quite possible that some of our member companies have methods of operation that produce not only reliable and satisfactory service but also economies that through some concerted effort of this association may be participated in by member companies generally? If such is the case, what is the most simple method of accomplishing this result? With this object in view specific methods and practices employed by member companies will be briefly reviewed with the hope that such an effort may result in stimulating interest in this very important subject, thus possibly improving the value of the New York Electric Railway Association as a medium for the interchange of railway practices, ideas and economies.

### SHOP ORGANIZATION

Various railway association standing committees have accomplished invaluable results, and many papers have been written on shop organization, but have we all taken advantage of such practices as are known to be highly efficient and economical? Among this long list of endeavors are the now well-known bonus and piecework systems, which are generally acknowledged as economy producers of the first order and for railway shop work more desirable than the unsatisfactory day-wage system. It can safely be stated that when once these systems are well organized and installed the results obtained will prove so satisfactory to employees that strenuous objections will be raised when any attempt is made to restore the day-rate methods. Moderate and small-sized railways, however, will raise the objection that such methods, however satisfactorily applied to large systems, are not so valuable for them. Likewise it is frequently stated that the system of accounting and the methods of determining prices are difficult and intricate. With regard to the size of the department the point may be well taken, but in view of the fact that economies of from 20 per cent to 30 per cent in reduction of expenditures are now realized in any number of railway and manufacturing companies, it would seem that this phase of the subject should not only receive careful consideration but should also have a fair trial. It has been asserted that one of the principal objections to the introduction of these methods on moderate-sized properties was that the several items constituting the volume of work were insufficient to obtain the desired results. If this was found to be true, would it not be possible to schedule the year's requirements in items of sufficient volume to overcome the difficulty? For instance, a year's supply of bearings or standard forged repair parts, etc., might be got out at one continuous period, thus overcoming the deficit in the continuity of work. The main thing to be borne in mind is that the economical re-

ward is high and that a little intelligent analysis is very likely to overcome all obstacles.

Both efficient and economical operation of shop tools should also be considered in this day of rapid development in the use of alloy steels for cutting tools. The character of work to be performed, whether of brass or steel, should be duly considered and the proper selection of the cutting tool made. In this way the output of tools is frequently increased from 20 per cent to 30 per cent.

Manufacturing institutions have gone even a step further by installing recording systems for measuring the continuity of tool operation, which in some instances have increased the total shop output 40 per cent. It is questionable, however, if these latter developments have proceeded far enough to warrant their consideration in railway shops because of the variable operations involved.

In the maintenance of railways many parts of car renewals are home-made, apparently through necessity, but it frequently occurs that a carefully designed purchasing schedule demonstrates the outside manufacturers' prices to be much more economical and, at the same time, affords a means of determining the parts most economical to manufacture. Therefore, the systems for performing this work should be designed with a view of always maintaining live competition so that certain hobbies in which some of us are inclined to indulge may be avoided to the profit of our employers—the railway companies.

### UNIT COSTS AND RELIABILITY OF SERVICE

We all know the value of comparative expenditure sheets, but do we go far enough in comparing the achievements of our neighbor companies? Such comparisons on brakeshoe wear, methods of performing welding repairs to motor and truck parts, etc., frequently unearth practices that more than repay the effort of investigation. For instance, the composition or shape of brakeshoes or the method of accounting for the full wearing weight of the shoes may easily lower or raise the cost of this production from 10 per cent to 30 per cent. Likewise the method of oiling bearings and the resultant wear of bearings usually show big differences. Methods and practices in painting cars, while an old subject, cover a wide range of possibilities and, when fully considered, usually reduce costs.

Over and above all other economies, however, is the reliability of equipment. The maintenance of an uninterrupted car movement, which is afforded only by highly efficient equipment, produces the most important saving of all, for it results in getting the waiting nickels of the profitable short riders and aids materially in obtaining the much desired good will of our critical public. Careful analyses of car performances are of material assistance in this problem. There are a number of instances where earnest study and efforts have reduced the run-in failures as much as 60 per cent and the cost of operation 12 per cent. Are such methods worth while? The answer is, just try them and decide for yourselves. Looking at this problem from another angle, it should be observed that high efficiency means low costs.

### CAR DESIGN AND EQUIPMENT

The design of a car structure contains many possibilities for economy, as is evidenced by recent developments in a number of our large cities. The present standard form of car structure is an inheritance of the pioneer period of horse and steam railroading. Considered in its elementary form it is a rectangular box at each end of which are trucks and stairways for the loading and unloading of passengers.



This particular form of car construction, even unto this day, is satisfactory for steam railway and suburban service where distances of sufficient length do not warrant minimizing the physical difficulty of entrance and exit. Steam railways, suburban roads and elevated lines in many instances have recognized this burden to passengers by constructing the station platforms on a level with the car platforms. Little or nothing, however, has been done in street car service in this respect. Since the distances to be traversed by cars are extremely short, primitive steam railway methods and their types of car structures are not so well suited for city work. Endeavors to overcome this particular phase of our problem have, as you know, resulted in introducing in different cities center-entrance cars of various types, which, from experience thus far obtained, apparently solve this and other vexing features of our complex transportation problem in a highly satisfactory manner. Hence it is now no exaggeration to say that center-entrance types of cars are here to stay. Many of our operators may be justified in doubting and questioning this contention, and if so it may not be amiss to start a little missionary work on this subject.

Our present standard types of cars require passengers to clamber from the ground over the tops of motors and other apparatus, not infrequently for a vertical distance of 40 in., which operation in this character of service is not only unnecessary and burdensome but is a constant hazard to life and limb. Compare this, if you please, with the safe, simple and logical method of entering such a type of car at the center merely by raising the foot the height of a curb or an ordinary house step and then traversing a minimum distance, and you have at once the difference. Add to this the further striking fact that boarding and alighting accidents can and have been eliminated by this particular design of car and you begin to appreciate that there is some real pleasure and value in store, not only for ourselves, but most important of all for our street railway patrons. Go a step further and duly consider the size and weight of this apparatus called a car and make it suitable for the particular purpose for which it is intended and you will be inclined to believe that there is room for economy even in a subject as old as Methuselah, biblically speaking.

In these center-entrance cars the weight question both for seated and standing loads has been minimized to a degree never dreamed of before. In car design, also, there is such a thing as making a car too large, for its size is usually determined by the requirements of the rush-hour service. It should be borne in mind, however, that the rush-hour service period is the smallest portion of the operating day and that the non-rush-hour period deserves some consideration. The size of the car, therefore, should receive careful attention, for in the light of past events the hit-and-miss methods once in vogue for designing cars are being dearly paid for by many railway operators. Whether a car be of the center-entrance, prepayment or standard type, the all-day passenger load factor should receive due consideration, and the economical medium, with respect to the size, weight, etc., of the car, be determined. The two-motor versus four-motor phase of the question also needs resurrection. The reduction in weights of cars and equipments has, of course, correspondingly reduced horse-power requirements. The combination of reduced weights and horse-power therefore has opened up economical possibilities in the use of maximum traction trucks.

In addition to the safety of entering and leaving center-door types of cars, there is also the vitally important feature of comfort to your traveling public. To understand public appreciation of this phase of the problem, it is only necessary to witness the satisfaction shown in communities where such cars are used. In addition to the elimination of boarding and alighting accidents, attention has also been given to minimizing front-end pedestrian accidents. Improvements in fender design have been made that will

reduce very materially the number and seriousness of these accidents, which is not only desirable from a humanitarian point of view through safeguarding the lives of your passengers but in addition produces economy through reducing the legal liability of the railway.

Car ventilation, heating and lighting are also items that are progressing rapidly. When your patrons begin to appreciate the value of adequate car ventilation, public relations are bound to improve. Economical heating is being obtained through the use of thermostats, but how many of us know the value of this apparatus? The recent rapid development of the tungsten lamp has resulted in reducing this item of expenditure 23 per cent and has at the same time wonderfully improved the lighting effect. What type of lamps are you using?

As a general rule, motor gear ratios should be inventoried from time to time, for it has been found that such records not infrequently produce large economies by showing that the gear ratios should be changed to decrease energy consumption. Likewise, the qualities of the materials with which gears and pinions are now being manufactured should be thoroughly understood, for wonderful results are now obtained with improved metals. When new motors are to be installed field tap control is now the order of the day.

To summarize this subject, new car designs of to-day are admittedly radically different from those of other days, but every difference has a reason, and each reason has an economy. In other words, the problem is apparently now being more thoroughly analyzed, after which the most suitable design of equipment is selected to meet the conditions.

#### PREPAYMENT OPERATION

Methods of fare collection are receiving more attention than ever before, and it is now only a question of how valuable prepayment may prove to be. A notable demonstration of its value has just been made by the introduction of prepayment cars on the Fifty-ninth Street line of the Third Avenue Railway, New York. The change from the ordinary non-prepayment car, which was made overnight, resulted in a revenue increase of 9½ per cent, notwithstanding the fact that the car mileage was reduced 4½ per cent. The annual report of the Chicago Railways Company for the year ended Jan. 31, 1912, shows an increase in gross receipts of 63 per cent for the past four years. There are some 1500 pay-as-you-enter cars in that company's service, and while this increase in receipts can partly be accounted for through the normal growth of Chicago, and the railway's business, a considerable margin can still be attributed to improvement in fare collection. The importance of fare collection is, of course, appreciated by all, but what have we done to take prompt advantage of the methods that are now known to be entirely satisfactory?

The fare box has been extensively introduced as an adjunct to prepayment operation. The value of this apparatus is contained in its moral influence on the conductor, and when it fails mechanically its influence and many nickels are lost at the same time. Fortunately, the remarkable development of the fare box indicates that mechanical failures and general cost of upkeep are becoming very low. On the Third Avenue Railway, for instance, two men suffice to maintain about 550 boxes.

#### PLATFORM ECONOMIES IN ENERGY CONSUMPTION

Bonus and piecework systems have been mentioned as means for rewarding the workingman who helps to produce economies in the shops. There is also the question of extending this reward to the efficient train operators who fulfil the schedule requirements in the most economical way through minimizing the consumption of electrical energy with its coincident saving in brakeshoe and wheel wear, etc. Different methods of doing this have been followed both here and abroad. Investigation will demonstrate that any number of companies are now obtaining savings of from 7 per cent to 15 per cent in energy consumption, 30 per cent

to 40 per cent in brakeshoe wear and 20 per cent to 30 per cent in wheel wear. Good economy, you will probably agree, but what does it mean to you?

CONCLUSION

Some of the foregoing economies have long been established, while others are of very recent date. The question which each member of the New York State Electric Railway Association should ask himself is: "Of what value

TABLE I—COMPARATIVE STATEMENT SHOWING RECEIPTS FOR THIRTY DAYS PREVIOUS AND THIRTY DAYS AFTER MARCH 25, 1913. ORDINARY CARS OPERATED PREVIOUS TO MARCH 26, AND P. A. Y. E. CARS AFTER MARCH 26

	Receipts	Average Receipts Per Day	Mileage	Average Miles Per Day	Average Receipts Per Car Mile
With ordinary cars from Feb. 24 to March 25, inclusive .....	\$39,718.35	\$1,323.94	78,553	2,618	\$0.5057
With P. A. Y. E. cars from March 26 to April 24, inclusive .....	43,408.70	1,446.96	74,769	2,492	0.5806
Increase .....	\$3,690.35	\$123.02			\$0.0749
Decrease .....			3,784	126	
Percentage .....	9.3	9.3	4.8	4.8	14.8

are they to me?" Another pertinent question is: "What can this association do to further the introduction of these economies?" We would suggest that means be provided by this association to conduct a thorough investigation of an assigned number of topics during the ensuing year so that costs and methods may be compared and considered by those who find that they are not using the best methods after all. Such an investigation will bring an equitable reward to the association and its member companies, for it will serve as a general round-up to show us where we are.

APPENDIX A—MECHANICAL AND ELECTRICAL ECONOMIES

The following statement of mechanical and electrical economies is of particular interest in proving that many of

TABLE II—DETAILS OF DAILY OPERATION, SHOWING RECEIPTS, CAR MILES AND RECEIPTS PER CAR MILE FOR THIRTY DAYS' OPERATION WITH ORDINARY CLOSED CARS FROM FEB. 24, 1913, TO MARCH 25, 1913

Date	Receipts	Car Miles	Receipts Per Car Mile
Feb. 24	\$1,281.55	2,628	\$0.4876
Feb. 25	1,304.10	2,600	0.5015
Feb. 26	1,350.15	2,610	0.5172
Feb. 27	1,340.75	2,601	0.5154
Feb. 28	1,316.95	2,685	0.4904
March 1	1,438.70	2,829	0.5085
March 2	1,123.85	2,215	0.5073
March 3	1,317.30	2,734	0.4818
March 4	1,301.65	2,720	0.4875
March 5	1,349.85	2,698	0.5003
March 6	1,373.20	2,727	0.5035
March 7	1,370.05	2,650	0.5170
March 8	1,364.40	2,752	0.4957
March 9	1,056.05	2,092	0.5048
March 10	1,427.65	2,526	0.5651
March 11	1,329.20	2,666	0.4985
March 12	1,355.60	2,613	0.5187
March 13	1,348.70	2,705	0.4985
March 14	1,329.30	2,734	0.4898
March 15	1,491.30	2,762	0.5399
March 16	1,029.40	2,142	0.4805
March 17	1,402.45	2,569	0.5459
March 18	1,340.35	2,606	0.5143
March 19	1,327.10	2,704	0.4907
March 20	1,360.70	2,661	0.5113
March 21	1,286.10	2,619	0.4910
March 22	1,431.60	2,814	0.5087
March 23	1,183.40	2,340	0.5057
March 24	1,363.40	2,754	0.4950
March 25	1,423.55	2,797	0.5089
Total	\$39,718.35	78,553	\$0.5057

the betterments made on one system are applicable to others even where there is an appreciable difference in operating conditions.

Reference has been made in the foregoing paper to welding. Here are some figures from the practice of the Third Avenue Railway as described at length in the ELECTRIC RAILWAY JOURNAL for June 21 in an article entitled "Electric Welding and Motor Rejuvenation." In one week \$354.90 was saved by welding instead of scrapping axle lugs, controller frames, pony axles and shafts, and in the week following three men avoided the expenditure of at least \$500 more. The work of this company not only includes the items mentioned but a great many others such as filling dowel holes, renewing brakeshoe heads, welding journal boxes, patching gear cases and, most striking of all,

converting an inefficient split-frame motor to a practically modern solid-frame type. Perhaps the most illuminating fact of this company's experience is that it has trained its own men to do the work instead of relying upon outside contractors, and that it has secured consistently good work, not by use of magical formulas, but by enabling its men to labor under the best surroundings. After reading the record of this performance, we might well ask ourselves, "Why should there be a scrap pile after all?"

The Brooklyn Rapid Transit Company has carefully tabulated some of its improvements as follows\*:

Old-type commutators were slotted at an approximate cost of 35 cents each with a consequent saving in motor

TABLE III—DETAILS OF DAILY OPERATION, SHOWING THE RECEIPTS, CAR MILES AND RECEIPTS PER CAR MILE FOR THIRTY DAYS' OPERATION WITH P. A. Y. E. CARS FROM MARCH 26, 1913, TO APRIL 25, 1913

Date	Receipts	Car Miles	Receipts Per Car Mile
March 26	\$1,532.45	2,131	\$0.7191
March 27	1,507.50	2,476	0.6098
March 28	1,561.50	2,533	0.6116
March 29	1,528.90	2,643	0.5785
March 30	1,116.95	2,040	0.5475
March 31	1,447.75	2,542	0.5695
April 1	1,435.25	2,543	0.5644
April 2	1,444.70	2,404	0.6011
April 3	1,454.65	2,501	0.5818
April 4	1,425.35	2,519	0.5660
April 5	1,536.65	2,756	0.5576
April 6	1,119.25	2,132	0.5250
April 7	1,440.25	2,374	0.6067
April 8	1,448.35	2,609	0.5551
April 9	1,458.65	2,647	0.5511
April 10	1,466.95	2,509	0.5846
April 11	1,576.65	2,534	0.6222
April 12	1,594.05	2,603	0.6124
April 13	1,095.00	2,153	0.5086
April 14	1,441.55	2,532	0.5693
April 15	1,604.60	2,574	0.6234
April 16	1,520.95	2,641	0.5759
April 17	1,530.90	2,569	0.5959
April 18	1,496.50	2,526	0.5924
April 19	1,590.50	2,627	0.6054
April 20	1,195.75	2,213	0.5403
April 21	1,461.90	2,633	0.5552
April 22	1,427.85	2,573	0.5549
April 23	1,470.30	2,536	0.5798
April 24	1,476.90	2,676	0.5519
Total	\$43,408.70	74,769	\$0.5806

maintenance cost, due to fewer flash-overs and less brush wear, coil overheating and commutator flating, of approximately \$0.29 per 1000 car miles.

All old field coils were impregnated with an insulating compound for approximately \$1.84 per motor. Experience indicates that it is worth while to install a vacuum impregnation plant at home if the company has at least 2800 coils. If the property is too small to operate such a plant, it would still be worth while to send the coils for treatment to an outside company.

Oil channels of elevated motors were reconstructed at an approximate cost of 20 cents per motor, thereby reducing the cost of lubrication from approximately 15 cents to 10 cents per 1000 car miles.

Lead-base bearing metal was changed to high-grade tin-base bearing metal at an increased cost of 10 cents to 49 cents per lb., but the actual saving was a decrease of 5 cents per 1000 car miles. The change also reduced the number of hot bearings, not only saving the average replacement cost of 10 cents per journal, but avoiding the accompanying and more costly loss of one and a half hours' car time and road delays to traffic.

Improved brake rigging was installed at the cost of \$10 per car; different types of brakeshoe heads were reduced from twenty-nine to three on a great variety of elevated and surface rolling stock (including maximum traction trucks), thus saving 15 cents per 1000 car miles in brake-shoe costs.

Controller improvements were made at an average cost of \$4.84 each and periodical overhauls at \$3 each have reduced the cost of maintenance on surface lines by approximately 10 cents per 1000 car miles in addition to decreasing controller flashes and burn-outs.

Older type motors have been rebored for new bearing fits

\*See ELECTRIC RAILWAY JOURNAL, Nov. 9 and Dec. 7, 1912, and Jan. 18 and March 15, 1913.

and fitted with bearing caps and oil cups at an approximate cost of \$60 per motor, the work being done with a horizontal boring machine which had been rebuilt at a cost of \$496. The maintenance cost of these old motors due to these improvements has been lowered to 44 cents per 1000 car miles, and the purchase of new motors costing \$400 to \$600 each has been postponed for years. The saving for the first eleven months of the fiscal year ended June 30, 1913, was \$80,000.

Manganese bronze check plates for older types of trucks have decreased the cost of maintaining journal bearings and check plates by approximately 50 cents per 1000 car miles.

#### APPENDIX B—TRANSPORTATION ECONOMIES

The accompanying tables covering the operation of the Fifty-ninth Street Crosstown Line, New York, show the receipts, car miles and receipts per car mile from Feb. 24 to April 24, 1913, inclusive. For the thirty days from Feb. 24 to March 25 this line was operated with standard closed cars of double-truck type; from March 26 to April 24, the following thirty days, double-truck closed cars with prepayment platforms and fare boxes were used.

### STANDARD METHODS FOR MECHANICAL DEPARTMENT

BY JOHN SIBBALD, MASTER MECHANIC FONDA, JOHNSTOWN & GLOVERSVILLE RAILROAD

The mechanical departments of railways have for a long time been directing their efforts toward the standardization of apparatus. Now we are occupied with the problem of standardizing the methods used in inspecting and repairing apparatus. The day of crafts is fast passing. When the present generation of craftsmen are gone it will be difficult to fill their places. Machinists, carpenters, blacksmiths, men who have learned their trades in a broad way by apprenticeship are no longer in the process of making. The machinist of to-day makes of his son a lawyer, a doctor or an engineer. As a result it is difficult to hire men, at the wages we can afford to pay, who can do the work required without close supervision.

The typical employee of to-day is one who was hired for an unimportant position and has gradually worked up through the more difficult positions as they became vacant. His methods at any time are a composite of the methods he has seen used and the methods suggested by his own ingenuity. The satisfaction which he gives depends upon his opportunities for seeing work properly done, the acuteness of his observation and his natural cleverness. The resulting methods seldom represent the best way to do the work. The class of workmen we are able to employ seldom possess enough of the science underlying their art to plan it in the best way.

We believe that to make our workmen effective it is desirable to furnish them with written instructions for various operations. A short time ago the company with which the writer is connected undertook to do something along this line. We have taken up one item at a time. Our foremen are informed what subjects are to be considered, and they collect what data they can. A foremen's meeting, presided over by the head of the department, is then held. The subject is analyzed and discussed, and if possible a standard practice is outlined. If this is not possible, the subject is put over for further investigation. Consideration is given to the materials and tools used and to the sequence of operations.

It is surprising the amount of thought that can be given with profit to comparatively simple operations. As an example, take the familiar instructions for lubricating axle journals. There is one method of packing a journal box that is used everywhere. It is one of the most effective operations that have been developed by railroads. We be-

lieve that the almost universal use of this particular method is due to the wide circulation of printed instructions. These instructions have been furnished by the companies selling lubricating oils, the magazines read by railroad men and, in some cases, by the railroad companies themselves. We think that the idea illustrated by this example can be extended to other unit operations of maintenance.

When, in our foremen's meetings, we find it possible to decide upon a method as standard practice, it is incorporated in a loose leaf bulletin. To insure the bulletins being practical, the men who supervise the work are given a voice in its discussion. Instructions are to be simple. They are written in terms understood by the workmen. Where illustrations are required photographs are if possible used. Bulletins are issued to the foremen in loose-leaf binders and are at once put into use by them. After a bulletin has been in use by the foremen for about six months it is our intention to revise it in the light of this experience, print it and furnish copies to the workmen.

Of course, this idea can be made ridiculous by its application to operations which are seldom repeated or which are of little importance from the standpoint of reliability or cost, but within its legitimate field it can be used to advantage. We do not wish to be understood as thinking that an art can be taught entirely by printed instructions, but we do think that even where high manual skill is necessary a man can be aided in acquiring the technic of an operation by instructions which point out the best methods and the common cause of failure.

### CONSTRUCTION OF CREW AND CAR SCHEDULES

BY JOHN J. DEMPSEY, SUPERINTENDENT OF TRANSPORTATION NEW YORK CONSOLIDATED RAILROAD, BROOKLYN

The construction of crew and car schedules is considered one of the most important features in the operation of a railroad, but in spite of the care which is usually devoted to this work, it is possible for most of us to attain an even greater degree of efficiency in this direction. While it is impossible to lay down hard and fast rules for the construction of schedules, as the schedules must conform closely to the characteristics of the traffic moving, there are certain cardinal principles which will insure economy and, at the same time, render possible the greatest efficiency in operation.

The first point to determine is "Where does the traffic on this line originate and where does it go?"

Careful observations by competent inspectors and checking of station accounts should make this perfectly plain in a short time. It may develop that the traffic fluctuates but little and originates principally at either end of the line and rides all the way through; however, this is an exceptional condition. If that is true, the superintendent's problem is a comparatively simple one. But if the conditions are similar to those on some of the lines in Brooklyn, where the line is partly in a business section, partly in a well-settled residential section and partly in a sparsely settled suburb, the problem is complicated by reason of the varying volume of traffic in the different sections and the possibility of waste mileage. Under these conditions, it is proper to schedule a reasonable interval between terminals during all hours of the day. In determining what a reasonable interval is we should not confine ourselves solely to a consideration of the volume of traffic but should operate a headway that is short enough to offer an inducement to ride. This through service will probably not make adequate provision for the traffic at the point of maximum loading, to care for which short-line service must be operated within reasonable limits. For instance, suppose a line 10 miles long with a 4-mile section in which the density of traffic is considerably greater than on either side. A four-minute interval from terminal to terminal will furnish good

service for the line as a whole, but on the lighter sections a six-minute headway would be reasonable, and in the middle section, even with a four-minute headway, overloads occur. If we operate a six-minute headway through and a six-minute headway on the 4-mile section, we shall then give perfectly adequate service on the entire line with a three-minute headway on the 4-mile section. But we are accomplishing more than this. We reduce the car mileage, which means a reduction in platform cost, in power consumption, in maintenance of way and structure and of equipment, and we are able to do this with a smaller number of cars. This point is one which deserves most careful analysis by a superintendent who thinks he is short of equipment.

#### COST OF RUSH-HOUR SERVICE

It must always be borne in mind, when the relation of the earnings of a road to the capital invested in cars is considered, that it is the additional equipment required exclusively for rush-hour service that constitutes the heavy burden in the way of motive power interest charges per car, as its earnings are confined to four hours. The equipment required for non-rush hours is a fixed quantity, and its cost bears a proper proportion to its use; or, to put it another way, it is out on the road practically all the time and under normal conditions its earning capacity is such as to make the interest a reasonable proportion of the receipts. But on most roads this non-rush equipment is only about 40 per cent of the total. This means that 60 per cent of the cars are making only about four hours a day, five and one-half days in the week, or, to be more exact, only forty-six full days of work, less than 13 per cent, during the year. Then we must also not lose sight of the fact that the cost of car equipment represents only about two-fifths of the entire capital investment in connection with that equipment. Power houses, transmission lines, car storage, additional tracks, all follow in natural sequence, and the interest on these capital charges must be earned from the transportation of passengers. When the maintenance and operation of these additional facilities soon show up in the debit column, the superintendent is asked, "Where is your increase in receipts? What is the explanation of these cost percentages?" and his dilemma is due largely to loosely constructed schedules.

It seems to me that excess equipment is undesirable because I know that if it is a question of getting every possible mile out of every car, the company will receive the greatest possible return on its capital investment. Furthermore, every conscientious man (and we are all conscientious men) wants to have enough work to keep him busy, else his interest in his work wanes. If a man has to scratch to make both ends of his schedule meet, if he has to devote hours and days of hard study to solve his operating problems, his measure of success has all the more gratification in it. But if he has a yardful of empty cars and a hundred idle crews hanging around, and it is only a question of putting the trains out on the road, he feels that about 4 o'clock in the afternoon is the proper time to adjourn to the club or take some other form of recreation, and I hesitate to dwell upon the picture that follows.

#### CONSTRUCTION OF CREW SCHEDULES

Let us pass to the second point—"the construction of crew schedules."

After determining the proper car schedules for the line, it is not simply a question of putting a crew on each car and letting it go at that. We must so construct our crew schedules as to give every man a reasonable day's wages within reasonable hours. Probably by neglecting this point we could crew our cars more cheaply, but it would be at the expense of ultimate efficiency. At the same time, the company must receive fair treatment, and to this end the crew schedules should be built so as to give the company a reasonable percentage for hours worked to hours paid.

On a line which has rush-hour traffic morning and night it is necessary to make many runs swing. This invariably involves a time allowance. The superintendent should carefully consider the possibilities of using in some other branch of the service crews who would otherwise draw time allowance. There are many such ways. Usually the operation of work trains and shifting of equipment is confined to non-rush periods; these trains can generally be crewed with men on swing. It is nowadays not considered necessary by the large companies which operate many lines to have a repair shop on every line. Concentration of shop facilities makes for economy in maintenance. So it can generally be arranged to operate the car light to the shop to which it is assigned, to pull it in after the rush-hour periods and with the same crews and to put these cars into service again direct from the shop. This means a saving in car mileage and no additional cost for crews. Other means, incidental to the situation, will occur to the superintendent who watches these things closely, and it is possible only by constant study and careful scrutiny to catch up all the loose ends which, though individually small, collectively mean many thousands of dollars each year.

#### ANALYSIS OF ACCOUNTS

I have referred several times to the necessity for close study of operating conditions, with a view to increasing efficiency and, at the same time, reducing costs. This study must not, however, be limited to the operating conditions. The general manager of the road has no time to go into details. That is what the superintendent is employed for. The manager looks only at the results. If complaints against the service come in, he will call the superintendent to account, but the careful man will see well to it that such complaints are scarce. Every month, however, the manager analyzes carefully the official statement of the preceding month's operations and he is apt to look at the "cents per car mile" column perhaps a little longer than at any other. He measures to a certain degree the success of operation and the superintendent's efficiency by the results shown there, but he cannot measure the adequacy of the service by those figures. It, therefore, becomes the superintendent's task to keep up his car-mile earnings and give the public proper accommodations.

The next column generally regarded as of importance is the "cost per car mile," the difference between which and the receipts per car mile is called "operating income," or, in other words, what the superintendent is earning for his company. I think that most people have a misconception of the exact importance of this unit. Many factors enter into its make-up, and it is well-nigh impossible to detect from even a most exacting dissection of this unit whether there is waste or not, and it is quite difficult to locate it if you make, perhaps, a good guess that there is waste. But take the cost per car hour, divide it into its component parts and you will find what you seek. Platform cost bears a certain definite relation to car hours. Platform cost consists of the wage hours paid to motormen and conductors while actually operating cars, plus lay-over time and time allowances. If your schedule calls for 100,000 car hours a month and the average platform rate per hour is 47 cents, you would figure the normal cost at \$47,000, exclusive of lay-over time and any special concessions. These items may amount to 10 per cent or 15 per cent; but when the monthly statement comes in you find your car hours cost \$56,000. Here is the telltale. You immediately go on a still hunt for the difference and probably will find that an appreciable percentage can be saved either by reconstruction of the train schedules or reassignment of crews.

#### CAR LAY-OVERS AND CREW LAY-OVERS

Generally an arbitrary lay-over is granted crews; this lay-over in rush hours is almost invariably longer than the interval operated. If the car lay-over is scheduled the same as the crew lay-over, some equipment is lying idle during

the busiest part of the day. More cars are then needed than would be required if the car lay-over were only long enough to afford reasonable leeway to assure the starting of the car on its next trip on scheduled time. In order to do this, we have found it economy to employ relay crews during rush hours. The relation of the arbitrary lay-over to the length of the run should be carefully figured out and the percentage of lay-over time reduced to the consistent minimum. If a five-minute lay-over is the standard, and the length of run is only twenty minutes, the lay-over time amounts to 20 per cent of the total time paid. It is often possible by "looping" or by combining trips over two lines, one of which is long and the other short, to make reasonable run lengths and effect a substantial reduction in the lay-over percentage. Frequently the lay-over time on the short line can be entirely eliminated.

#### RELATIONS THAT SHOULD EXIST BETWEEN RAILWAY EMPLOYEES AND THE SUPERVISORY FORCE.

BY N. W. BOLEN, SUPERINTENDENT OF TRANSPORTATION PUBLIC  
SERVICE RAILWAY, NEWARK, N. J.

The introduction of the word "should" into the subject assigned was a happy thought. It makes the task a pleasant one and permits contemplation of ideal conditions, rather than compelling adherence to conditions as they are. It may be reasoned that the discussion of ideals is of little value in these intensely practical days, nevertheless the setting up of standards above those followed in everyday operation will tend to bring the actual nearer the ideal.

Responsibility for the character of relationship existing between the employee and the official rests primarily with the official. He is the leader, and to a large extent his attitude determines whether the dominant note in the rank and file shall be loyalty, with its attendant blessings of co-operation and team work, or disloyalty, with its consequent evils of friction and discord. Instances may be cited where the official has tried faithfully to create a spirit of mutual confidence and esteem only to fail completely owing to outside influences. While such cases do exist, it does not alter the situation so far as the duty of the official is concerned, namely, to foster and encourage proper relationship with his employees.

The employee's attitude in the matter is governed to a large extent by his environment. If he is surrounded by influences opposed to the corporation he is expected to serve, and his daily reading is confined to literature which steeps the public mind in suspicion and distrust, his attitude probably will be passive, if he is not entirely arrayed against the policy of the official. If there be added to these surroundings those influences which are constantly at work to create and widen a breach between the employee and the employer, the establishment of mutual confidence becomes very difficult. But if an optimistic view is taken of the problem, and the officials concerned possess a real desire to create cordial relations, the men can be reached.

The busy official of a big system, whose many duties leave but scant time for planning personal interest campaigns, is prone to dismiss the subject with the statement that close relations with the employee may be possible on a small road but are out of the question on a large property. It is an unfortunate view to take. The operating head of a large system, who out of the very nature of things cannot come into intimate touch with many of the employees, should imbue his subordinate officials with a lively interest in the personal welfare of every man coming under their direction. A supervisory force which catches the personal interest spirit will prove a formidable defense against the attacks of the devil of unrest. The question of relations is one entirely distinct from welfare work. The

establishing of mutual good will and co-operation may or may not involve participation in the latter, but in any event it is essential to securing the best service.

It is, I think, of the utmost importance to inculcate the idea of what, for lack of a better word, I shall call co-operation, although that fails to give full significance to what is intended. What is meant is the firm establishment in the minds of every one on the property, from the head down, that he is engaged in a big work; that no matter whether the part he plays in it is great or small, nevertheless it is of importance; that he has the right to expect co-operation, encouragement and good will from all of his fellow workers whether they occupy positions superior, equal or subordinate to his own.

The idea that each man has a stated stint to do, that when he does it he has earned his wage, and that there is no reason why he should interest himself further in the affairs of the company or the affairs of his fellow workers, means ineffective service.

The work of eradicating this attitude on the part of employees must begin with the supervisory force. You can never expect an employee really to interest himself in company affairs until the company takes some interest in his affairs; until it makes it evident that it regards the employee as a human being, made of the same clay as the man in power, with the same desires, the same needs, the same motives and the same attributes—not a mere cog in a piece of machinery, expected to do a certain work, to receive no credit for superior performance and to be cast aside for failure.

Again, the effort must start at the top. The spirit of humanity must be transmitted from the highest official to his immediate subordinates and from them down through the intermediate steps until it reaches the man on the platform or in the shop. You know how it is in any organization. The president calls down the manager; the manager roasts the superintendent; the superintendent berates the bookkeeper, and the bookkeeper takes it out on the office boy.

It works contrarivise as well. The spirit that pervades any organization is the spirit of its head. While human nature is human nature, you are never going to get the right kind of service out of men who are made surly, obstinate and disobedient because they are convinced that their superiors have no sympathy with them but desire only to get every possible bit of work out of them and at the lowest cost.

How much better it is if the attitude of all alike is this:

"Here we are, 600, or 1000, or 4000 men—directors, president, vice-presidents, managers, superintendents, supervisors, engineers, foremen, motormen, conductors, shopmen and others—all trying to work this railway in the best possible way to secure proper returns to the investors, to furnish good service and to secure the best conditions for ourselves. At bottom we are all men of much the same kind. By reason of education or experience or some other circumstance we are occupying different positions, but we all have our work to do and the thing is to do it right.

"Rules are necessary, discipline is necessary, obedience to orders is necessary, stern measures to secure these things are necessary, if the work is to be done well—but we don't have to cease to be human beings to accomplish this; we can still have sympathy with each other; we can still treat each other with courtesy and consideration, and we can still recognize that, after all is said and done, we are all simply men entitled to receive fair treatment from our fellow men and obligated to give it."

A word of greeting to a subordinate does not cost anything, but it may make that man a friend, and, moreover, and this is as important a consideration as is connected with the subject, it may instil the idea of courtesy in that employee's mind, may teach him that courteous treatment of others is worth while, and so affect his dealings with the

public with whom he is in touch and who are apt to judge the company by his actions.

The subject assigned is one which must necessarily be treated in generalities, but there is one rule for men in authority which I think so vital that I am going to come down to particulars and give it here. It is: "Never discharge any man in a spirit of anger."

There is only one real reason for discharge, and that is that the usefulness to the company of the man discharged has ceased. You are in no position to determine that if you are angry. It is a matter for calm deliberation. You must always remember that experience in employees is a thing to be conserved as having actual value, which can be shown in dollars and cents if necessary. Make your men see the circumstances from your viewpoint. The successful operation of the property is the aim of your efforts and should be of theirs. Rules and regulations are necessary to such successful operation. Violations of those rules must be prevented. Punishment for violation is requisite for this. The employee is not the victim of your dislike or anger, but must stand the brunt of his own misdeeds because the successful operation of the property, your business and his, demands it.

My experience has been that this attitude has accomplished results, that dismissals and suspensions are fewer, and that the men themselves better appreciate the true meanings of rules and discipline and increase their efforts to obey.

Be reasonable—that is the first rule for the supervisory force.

Be courteous—that is the second, and always consider that you are dealing with men and not machinery.

The property with which the writer is connected has for a number of years been directed by men heartily in sympathy with the promotion and maintenance of pleasant relations with the employees. The application of the policy indicated has taken a number of forms. The first attempt to establish mutual confidence started with Christmas entertainments, which were followed by the formation of social clubs among the transportation employees. Here the value of co-operation was recognized and accepted, and the management of the social organizations was turned over to the employees. The wisdom of this arrangement has since been fully demonstrated.

Following rapidly came the ladies' auxiliaries, which provide social features for the wives and mothers of the employees. Such gatherings are of much value and exemplify the truth of the old adage that "The hand that rocks the cradle rules the world." Fishing trips, shore dinners and pool tournaments have done much to encourage closer relationship between officials and employees, while the fascination of the great American game has resulted in a baseball league of twenty-three teams, playing in two sections on account of the size of the circuit. This aggregation of 250 players, with their following of some 3000 enthusiastic fellow employees, comprises a force which does much in the interest of harmony.

In early years carhouse plans were drawn with careful regard for the protection and proper housing of the rolling stock, while the men, the most important asset of the company, were left without shelter or convenience of any description. Times have changed, and one of the omens of good that can be noted is the importance attached to providing cheerful and comfortable quarters for employees in the up-to-date carhouse. Carhouses of recent design on this property provide assembly rooms, complete with stage and piano, reading and pool rooms, together with first-class sanitary arrangements. A recent addition to the comfort of employees consists of restaurants, conducted not by the company directly but sufficiently under its supervision to insure wholesome food at all times at reasonable prices.

What is known as the company's welfare plan became effective Jan. 1, 1911. This plan provides, without a cent of

cost to the employees, a sick benefit of \$1 a day after the first week's illness and continuing at this rate to a maximum of ninety days in any one year. It provides also for an insurance of \$300 upon the life of the employee, payable to his beneficiaries, and for the veteran, who has yielded his best years to the service, it provides a comfortable pension. That this plan has done much to promote pleasant relations between employee and employer is shown by the larger number of men remaining in the service and the better spirit manifested by all in the performance of their daily tasks.

## FREIGHT AND EXPRESS ON ELECTRIC ROADS

BY FRANK WALSH, GENERAL MANAGER ELECTRIC EXPRESS COMPANY, SCHENECTADY, N. Y.

The purpose of this paper is to call attention to the differences in the freight and express methods of electric lines. The practice of the steam roads is practically uniform with the exception of the classification of freight, and even that is divided into only three groups, the official, Western and Southern classification territories. However, in looking over some twenty electric freight and express tariffs, I find the following variations in the classifications:

Four companies use individual classifications, naming rates per package or per 100 lb.

Three companies use official classification with certain exceptions.

Three companies use straight official classification.

Three companies use part of the official classification, using only first, second and third-class rates and some commodity rates.

Seven companies use a classification based on the old-line express companies' classification, with a flat rate per 100 lb., with certain exceptions.

Out of these twenty tariffs, we find that fourteen companies either make deliveries direct from car to consignee or from their warehouses, while six companies maintain a wagon service. This shows that there is a big difference in operating methods of electric lines, and they cannot all be right. The classification of freight also needs careful consideration. The official classification used by the steam roads is the product of years of scientific study for their needs, but in my judgment is not just what is needed for electric roads. Our proposition in handling freight is different from that of the steam roads. If we get a lot of coarse, bulky freight, we must put on extra car service, while the steam road only puts another freight car on its train. Only a small percentage of the freight moving over steam road lines takes higher than a third-class rate, and unless we can run trains or trailers, it is the high-class freight that we must seek.

The territory of most electric lines is limited. In very few cases are terminals of the roads 100 miles apart, and in a territory no larger than that there is not enough of what is termed express matter to pay for operation. The success of the old-line express companies is to a large extent due to the vast mileage they cover. Electric roads, then, must do a business which is a combination of express and freight business, so there is no reason why operating and classification of freight should not be nearly uniform. Variations in local conditions would no doubt, in some instances, change operating conditions, but this would be the exception and not the rule.

There is much difference between the official freight classification and the express classification. The express classification rates articles as merchandise and general specials, while the official freight classification rates articles in some six or eight different classes. Some articles which are rated by the steam roads as first class are rated by the express companies as general specials, which is cheaper than their merchandise rate. On the other hand, some articles rated by steam roads at third, fourth or fifth

classes are rated by the express companies at double their merchandise rate. These are quoted as just one or two instances of the difference between the two classifications, and I think are an argument in favor of getting out an electric freight and express classification which would be to some extent a combination of the two, at least that part of them that would cover our needs. There are some classes of freight that take low rates on steam roads that it would not pay the electric roads to handle, even if rated at first-class rates. Hence, in making up an electric classification, this is one of the things that would have to be considered.

A properly managed and well-developed freight and express department is a valuable addition to any road. When the merchant gets good service by the electric line he generally has a good word to say for it, and he will patronize it when he wants to travel.

The great question is: Does it pay? In most cases it does. Every freight department should pay its proportion of the operating expenses of the road. I have seen reports where proper charges had not been made against the department, and it showed big profits. I have seen others where deficits were shown by the freight department, but how they had exaggerated the operating and maintenance charges! Of course, freight and express is not all profit. The item of loss and damage must be watched closely, or it will become excessive. In any event, some uniform method of operating and of classifying freight should be adopted. I would urge that the managers of the different properties get together and look into it carefully, for it is a subject worthy of consideration.

PROPER LOCATION FOR TROLLEY WIRE ON CURVES AND CORRESPONDING LOCATION OF OVERHEAD FROGS

BY JOHN H. BARNARD, J. G. WHITE ENGINEERING CORPORATION

There are two ways of expressing the proper location of an overhead trolley wire. It may be said either that the wire should form no angle with the trailing trolley wheel or that the plane of the latter should be perpendicular to the radius of the wire at the point of contact. While the former may be the view usually taken upon this matter, and it answers sufficiently well for tangent track, the latter idea leads to a clearer conception of where the trolley wire should be located through curves and in the approach to and departure from them.

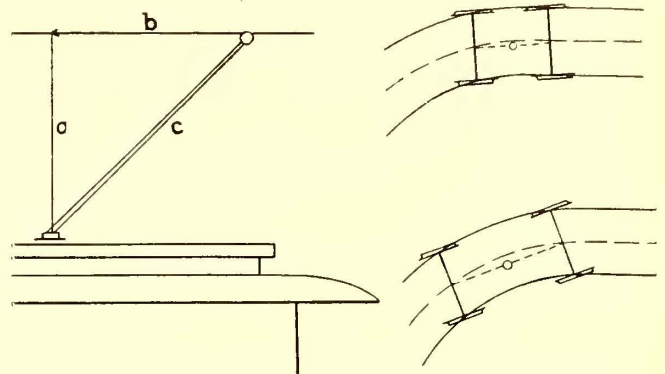
A fair analogy to the curve desired is the track of the rear wheels of a wagon turning a corner. In that case the plane of either rear wheel is always at right angles to the momentary radius of the curve that it is tracing. So it should be with the trolley wheel and the wire which it is following.

To plot the track of the rear wheels of a wagon it is necessary to know not only the path of the front wheels but the length of the coupling between the front and rear axles, and similarly, in plotting the analogous curve to represent the position of the wire to be followed by the trolley wheel, it is equally necessary to know how far it trails behind the spindle of the trolley stand.

As shown in Fig. 1, this depends, first, upon the difference in height between the trolley stand and the trolley wire, and, second, upon the length of the trolley pole. This resulting distance, shown as the side *b* in Fig. 1, may well be expressed as the "trailing distance" and as such will hereafter be designated. In passing, however, it will be remarked that this distance is not always constant for the same car and pole but will vary with differences in the height of the trolley wire along the route traversed. Again, while not strictly true, the statement is sufficiently correct for all practical purposes that the trailing distance for all cars traversing a given route should be approxi-

mately the same. In other words, the cars with a higher roof should have correspondingly shorter trolley poles than those with a lower roof.

Besides ascertaining the trailing distance, it is also necessary to the plotting of the desired curve to trace the path which will be followed by the trolley base. There are three possible locations upon the car for this device and,



Figs. 1, 2 and 3—Diagrams of Position of Trolley

as shown in Figs. 2, 3 and 4, the path traced by the base will differ accordingly. If it is directly over the center of the comparatively short wheelbase of the rear one of two double trucks, its path will be a close approximation to the center line of the track. If it is over the center of the wheelbase of a single-truck car this path will be further removed from the line of the track. If it should be over the center of the body of a double-truck car, its path will be traced by the center point of a line joining the paths described by the center pins of the two trucks and so will be still further removed from the center line of the track.

Were all track curves circular and all trolleys similarly mounted on like cars, it would not be difficult to derive a more or less accurate rule for determining how far the theoretical position of a trolley wire should vary from the center line of the track so that the plane of a passing trolley wheel might always be perpendicular to the momentary radius of the wire at the point of contact, but the cases most affected are those of short-radius curves, which are rarely circular, and a great majority of tracks are traversed by various classes of cars, so that any sufficiently accurate formula would be entirely too cumbersome for ready application. Fortunately, in practically all curves sharp enough to require other than a cut-and-dry method, the track work is usually a matter of special construction, of which there are invariably at hand the large-scale prints furnished with the special work.

Upon a piece of tracing paper laid over such print it is not a particularly difficult task to plot the paths of the

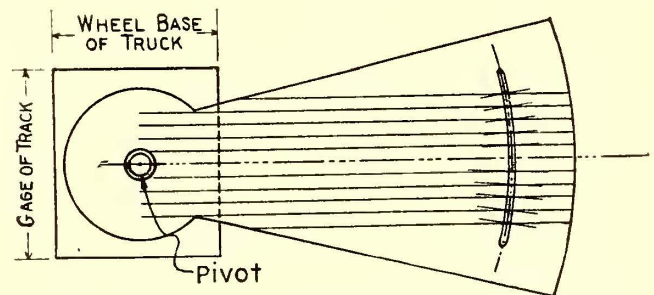


Fig. 5—Template for Laying Out Curves

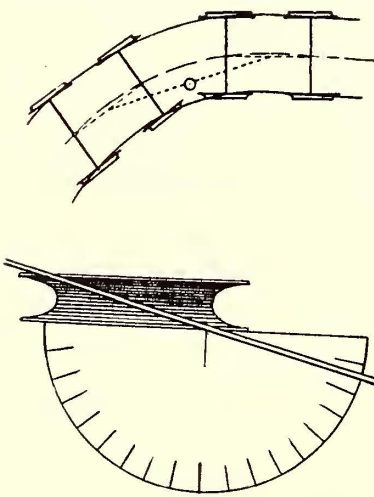
variously mounted trolley bases, and then, with a couple of triangles, to plot the number of points described by the several trolley wheels. Thanks, however, to the ingenuity of an office mat, there has been devised a little template, shown in Fig. 5, representing the mounting of a particular trolley base laid off to a given trailing distance. With such a device it is only a few moments' work to plot many

points, and the device is so simple that one may easily be made for each of the various classes of cars operating over any given line. With several of these there can in a few moments be laid out plenty of points to show the compromise curve best adapted to all classes of cars operated.

Only in the exceptional cases where a bar conductor may be used is it possible to form the conductor to an exact curve, and from Fig. 6 it will be seen that the entrances and departures are not even regular curves. Instead, the conductor forms almost invariably a series of chords only approximating the best location. Instead, therefore, of plotting the ideal curve, it is much more practicable to plot the outside limits beyond which it is not permissible to locate the wire. The shorter and more numerous the chords into which the conductor is broken, the more truly will it approximate the ideal location, but too numerous deflections are not only more costly by reason of the additional pull-offs required, but are less slightly by reason of this quantity of material, and the weight of it tends to pull the poles out of position, slacking the wires and rendering it less accurate as an approximation than one of fewer and longer chords.

This reasoning necessitates the determining of how much the angle of the trolley wheel may differ from perpendicularity with the momentary radius of the wire at the point of contact and how this may readily be ascertained for any particular diameter of trolley wire in combination with any style of trolley wheel which may be used in the manner shown in Fig. 7.

By this simple experiment, with a 2-ft. length of trolley wire and sample of the wheel to be used and an ordinary celluloid protractor, it will be discovered why trolley wheels may, with rare failures, follow a trolley wire which varies considerably from the best location, but it will also be noticed that there is a very sharply defined limit beyond which the wheel cannot be forced to remain in contact with the wire. With small sized trolley wire and wheels with wide U-shaped grooves, it will be found that the wire and wheel may form a rather large angle before disengagement results, but, regardless of the size of wire or form of the groove, the difference between maintained contact and certain disengagement is very sharply defined, and no strength of spring will maintain engagement after the "critical angle" has been reached.



Figs. 4 and 7—Positions of Trolley on Curve

Where there are several forms of wheel running under a given stretch of wire, the "critical angle" which should rule is, of course, that which is the smallest, and to prevent it being exceeded through the giving of poles or slacking of pull-offs, it is well to work to a "critical angle" not much greater than two-thirds of that which may seem allowable.

On the template shown in Fig. 5 there will be noticed a number of lines parallel to the axial line and upon each side of it. Each of these represents a certain "critical angle" for this particular trolley and wire and, according to circumstances, their intersection with the arc AB shows a divergence on either side of the theoretical location which it may be desired to allow. So, instead of using the

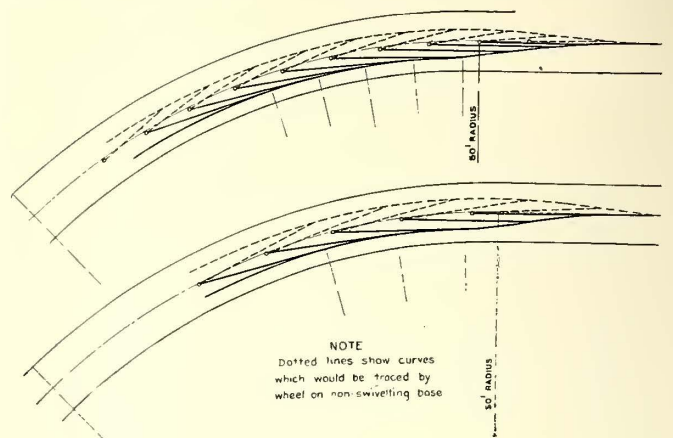


Fig. 6—Positions of Trolley on Curves

template to plot the ideal location, it may be used to plot the outside limits, and when these limits have been plotted for all classes of cars the chords into which the trolley wire is broken should cross none of these limiting lines. Fig. 9 shows such limiting lines laid out for a single class of car and the arrangement of chords chosen to conform therewith. In Fig. 8 there is shown a rather exaggerated case of a double-track reverse curve designed to permit the passing of rather long double-truck cars, in which it may be seen that for the cars in each direction the trolley wire twice crosses the inner rail and indeed is at points as far as 7 in. or 8 in. inside of the inner gage line.

Besides the above facts there is needed one other in the study of the proper location of an overhead frog. This is, that the trolleys of cars following the through line tend to keep the main line wire, and that the only means available for causing the trolley of a car taking the branch-off to

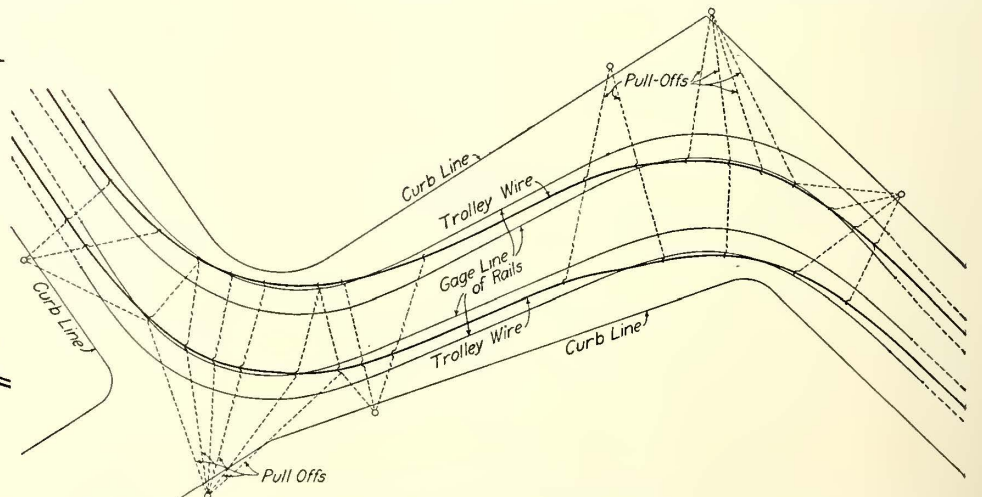


Fig. 8—Double-Track Reverse Curve, Showing Proper Position of Trolley Wire

select the branch-off wire is the side pull due to the divergence of the car in following the branch-off rails. From this it follows that the further this car is advanced along the branch-off before its trolley wheel has reached the overhead frog, the more positively will its trolley tend to take the branch-off wire. It likewise follows, however, that the further the position of this car's trolley base de-



parts from the center line of the through track, the larger angle its trolley wheel is forming with the main line wire, and if the frog is advanced too far along the main line wire the trolley wheel will have exceeded the "critical angle" and will have jumped the main line wire before it has reached the frog.

On the track plan of the branch-off we should, therefore, plot the limits of the several classes of trolleys which may have to take the branch-off and locate the frog as far beyond the points of the track switch as will not be beyond the limits of the most exacting of the trolleys.

In the case shown in Fig. 9 it happens that the branch-off is from a curved main line so that the theoretical location of the line wire should be laid out as well as the limits for the cars taking the branch-off, as it is upon this line that the overhead frog should be located instead of upon the center line of the track as in the case of a branch-off from a tangent main line.

It may be argued that all this is entirely beyond the capacity of the ordinary line foreman. This is true enough, but not more so than are spiral curves beyond that

subdivision was flange failures. Safety demands adequate strength and a speed consistent with the design of the trucks. The maximum-traction truck, considering both safety and easy riding, should not be operated at a speed exceeding 25 m.p.h. Owing to less available tractive effort the truck is not suited for operation on grades, especially under bad rail conditions.

Passenger trucks should be easy-riding, so that on unfavorable track conditions the shock may be taken up by the springs rather than transmitted directly to the car body. Simplicity of construction combined with accessibility of parts is what the railway man demands. Not only the first cost but also the maintenance cost of any particular truck should influence the purchaser. Needless to say, the maximum-traction trucks should be cheaper to maintain than the M. C. B. type, owing to the fewer parts, lighter weight and easier conditions of service. The power consumption should also be less.

As regards the relative position of the driving and pony wheels of a maximum-traction truck, there exists a wide divergence of views, based on the results to be obtained.

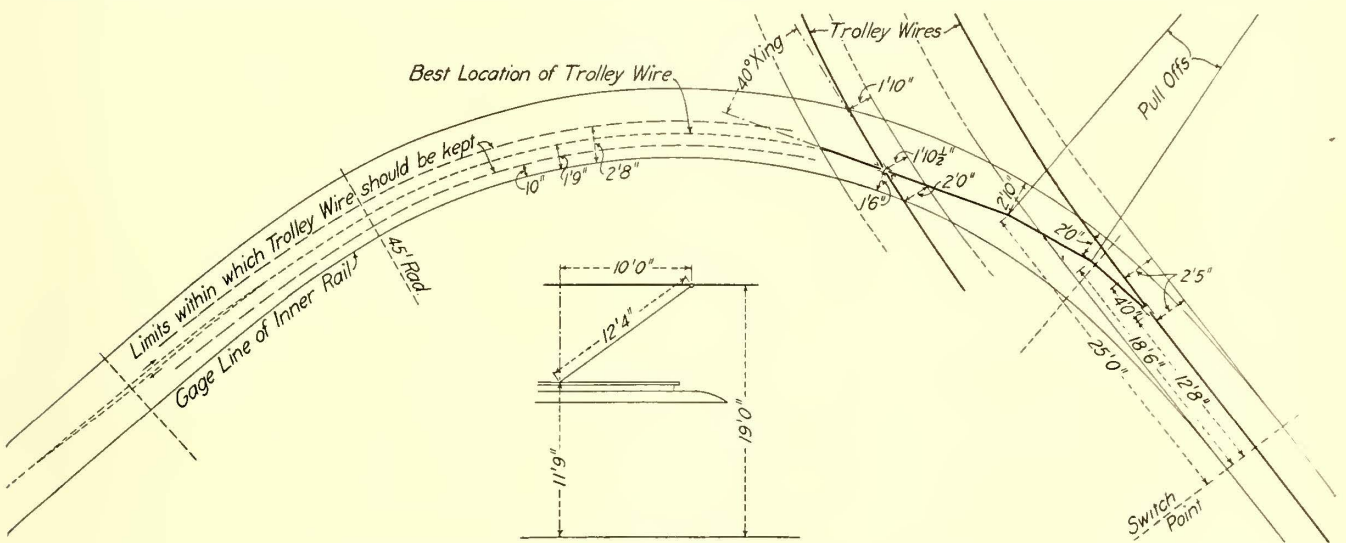


Fig. 9—Limiting Lines of Position of Trolley on Curves

of most track foremen. Within a comparatively limited number of years all track foremen worthy of the designation have learned to follow points set for them, and for locating overhead lines to exact position the foreman line-man can easily plumb down to points set for him in the pavement or which he can set himself from data furnished by the drafting room. In point of fact, the lines shown in Fig. 8 were dressed to points given as being definite distances beyond the preceding point and a definite number of inches inside or outside of the inner gage line.

MAXIMUM-TRACTION TRUCKS VERSUS M. C. B. TRUCKS FOR CITY AND SUBURBAN SERVICE

BY H. A. BENEDICT, MECHANICAL ENGINEER PUBLIC SERVICE RAILWAY

Naturally, the maximum-traction type of truck preceded the M. C. B. type in the electric railway field, being a single-motor truck and of lighter design. It derives its name from the fact that approximately from 65 per cent to 75 per cent of the tractive effort is on the driving or large diameter wheels on the axle supporting the motor. On the M. C. B. truck we get 100 per cent tractive effort.

The first factor which should be considered is that of safety. It is of interest to note that in the recent compilation by the Interstate Commerce Commission of accidents on railroads from failure of equipment causes wheel failures lead the list, and of the wheel failures the leading

I believe that on a single-end car the driving wheels should come first, because of the fact that the greater weight is on them, thereby tending to hold the truck on the rails more than if the leading wheels were the pony wheels. On a double-end car, if the large wheels are placed at the ends of the car on the leading truck, the large wheel will always lead, followed by the rear truck with the small wheel leading. By this method there is probably less likelihood of derailment.

On the other hand, on a double-end car, by placing the pony wheels at the end, we reverse conditions; that is, on the leading truck the pony wheels lead, while on the rear truck the driving wheel leads. However, in this way we obtain less overhang, longer truck centers and lower steps, also a possible reduction of weight of underframing. On a center-entrance car with maximum-traction trucks we find the small wheels toward the center to allow for clearances and make possible the low step.

The short-wheelbase trucks with outside-hung motor on closed double-truck cars are being superseded by the M. C. B. type with longer wheelbase and inside-hung motors, which is an easier riding truck at high speed. The result is that on the longer lines where a higher speed is demanded the M. C. B. type is used, whereas the short-wheelbase trucks are found in the short, slow-speed routes.

The third annual report of the Board of Supervising Engineers, Chicago Traction, says: "The continued use of standard truck and four-motor equipment conforms to former practice established by the board, as noted in the pre-

vious report. However, maximum-traction trucks have received consideration, together with the two-motor equipment.

While it is a fact that the two-motor maximum-traction truck equipment has been greatly improved since its introduction several years ago and possesses unquestionable advantages for certain conditions of operation and to meet certain limitations in street capacity, the four-motor equipment, with its greater margin of tractive capacity and insurance against break-downs, still appears to approximate better the high standard established for the city of Chicago, especially in view of the wide streets available."

I have not yet received a copy of its fourth report, but I note from the trade papers that the Chicago Railways Company has recently drawn up specifications for 200 double-end semi-steel cars to be mounted on maximum-traction trucks.

In this age of consolidation and centralization it would be well if the purchaser and the manufacturer could act more in unison as regards the question of standardization of truck parts and reduction in truck weights. The modern pressed-steel truck contains no iron, except as regards the brakeshoes and possibly the car wheels.

In large centers of population where there are no severe climatic conditions, the grades are not steep, high speed is not demanded and the lines are not long, there is undoubtedly a field for the maximum-traction type of truck; also in small centers where both the cars and the earnings are light.

On the other hand, where there are not favorable conditions for the maximum-traction truck the proper type is obviously the M. C. B. two-motor truck, possessing 100 per cent tractive effort, high-speed possibilities, strength, simplicity and easy-riding characteristics to a marked degree.

### PAINTING ILLUMINATED DESTINATION SIGNS AT NASHVILLE, TENN.

The largest single item in the cost of maintaining illuminated car destination signs is found in keeping the lettered panels in legible condition. The usual custom is to retouch the letters by hand, but when it becomes necessary to renew a section of canvas to replace the names of the destinations by hand, painting is quite expensive. To reduce this cost of renewal to a minimum, G. W. Swint, master mechanic of the Nashville Railway & Light Company, Nashville, Tenn., has devised a scheme whereby a thirty-six-name sign may be replaced with a new one at a cost of \$1.50 for material and labor. Instead of doing the work by hand it is printed on the canvas by wooden blocks of the hollow-letter type. The blocks were made in the company's shops, and as many were prepared as there were destinations. The cost of carving the letters in the white pine blocks was comparatively low, and the useful life is, of course, unlimited.

The complete printing outfit comprises, in addition to the hollow-letter blocks, a section of plate glass by means of which a composition of printer's ink is evenly applied to an ordinary rubber roller, a padded table with clamps to hold the canvas firmly in position and an old armature core which is used to press the wooden block type against the cloth.

A view of the printing outfit is shown in the illustration. The ink is applied to the block by passing the rubber roller across it, and the block is then laid upon the white canvas, the armature core being rolled once or twice across it.

The quality of printing ink applied to the hollow-lettered panels and the weight of the old armature core cause the ink to penetrate the canvas, giving a longer life than when

applied by hand. The names making up a complete set of destinations are printed in series of five to a canvas panel. These panels are sewed together in one long strip for the car signs. In case only a portion of this lettered canvas becomes badly soiled, it may be ripped from the rest of the roll and a new panel supplied. The work of printing these signs is so simple that an expert is not required nor even

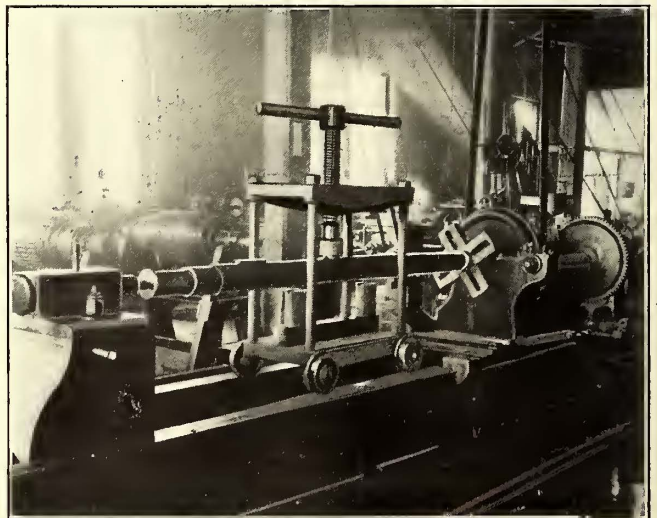


Illuminated-Sign-Painting Outfit at Nashville

a man specially detailed to do the work. Two men familiar with the operation, however, easily make eight five-name panels in an hour.

### A NOVEL AXLE STRAIGHTENER

The mechanical department of the Little Rock (Ark.) Railway & Electric Company has had in service for some time a home-made axle straightener which is used for either hot or cold straightening of bent axles and shafts. As shown in the illustration, the device consists of a substantially built carriage mounted on an ordinary lathe bed, two bearing blocks which may be raised or lowered by a set of shims and a 3½-in. screw which passes through the



Axle Straightener in Little Rock Shops

upper casting of the carriage. A swivel bearing at the foot of the screw comes in contact with the axle between the two bearing blocks so that kinks may be taken out of the axle without putting a strain on the lathe centers. The device is light enough to be readily removed from the lathe bed whenever it is desired to use the lathe for other purposes.

# Decision of Board of Arbitration in the Cleveland Case

Full Text of the Finding Which Upholds the Right of the Company to Operating Expenses in Excess of the Ordinance Allowance, Wipes Out the Deficits and Settles Other Matters of Difference with the City

The decision of the board of arbitration in the Cleveland Railway case was rendered on June 19, as stated in the *ELECTRIC RAILWAY JOURNAL* of June 21, 1913, in which an abstract of the finding of the board was published. The decision of the board in full is as follows:

"The undersigned, arbitrators appointed under the provisions of amended ordinance No. 16238-A of the City of Cleveland, and upon the demand of the Cleveland Railway Company made April 14, 1913, beg leave to report our conclusions.

#### RESERVE FUNDS FOR INSURANCE AND ACCIDENT CLAIMS

"In our deliberations we considered first question No. 3 propounded by the city, namely: 'Has the Cleveland Railway Company a legal right to maintain other reserve or surplus than those specifically provided for in amended ordinance No. 16238-A?'

"The board is unanimous in the opinion that the policy of maintaining an insurance reserve to stand for the hazard above the percentage of value protected by insurance sought is not sustainable by any provision in the ordinance.

"A majority (Messrs. Killits and du Pont—Mr. Duffy dissenting) of the board determine likewise that no reserve other than those specifically provided for in the ordinance may be created and maintained beyond the expiration of an ordinance year (the last day of February) to meet damage claims, under any proper construction of the measure.

"While it is entirely plain that safe business policy demands such practice by a company acting under a franchise of the character in general operation—allowing all profits to go to stockholders—to the end that current business and present capital may not be affected by the liquidation of damage claims originating in previous periods of operation, the majority see, in provisions peculiar to the ordinance before us, controlling reasons why such practice is here not only unnecessary but is practically forbidden and that the requirement in the expression of Section 21, 'any surplus in the hands of the company at the expiration of any period of one year remaining unexpended for operating expenses shall be placed to the credit of the interest fund,' should be literally construed with application to an unexpended balance of such a reserve as that now questioned.

"It is easily seen that ordinarily a failure to maintain such a reserve tends to impair capital. However, in the opinion of the majority, there are provisions in Sections 21, 23 and 22, operating in the order named, which in combination provide an effective substitute for the reserve which good business judgment suggests to be necessary to companies not protected by such franchise provisions.

"Section 21 provides for a way to increase the allowances for operating expenses. If such expenses grow substantially, because of unusually large liquidated damage claims necessitating an increased allowance, the first effect will be to diminish contributions to the interest fund. By Section 23 a lessening of the flow into this fund to the extent of reducing it below the minimum of \$300,000 will work automatically a rise in the scale of fare charges outlined in Section 22. Thus it is plain that an unusual expense for damages charged to the company, if it disturbs at all the present character of the company's business, operates to enlarge revenues and not to lessen or impair capital or security. To the argument based upon the fact that damage claims are often not adjusted

for several years after their accrual and that the absence of a reserve to meet such potential liquidations in future involves a burden upon car-riders to pay for expenses of operation which accrued not at all to their benefit, it is a sufficient answer, it seems, to suggest that, whatever burden there may be in this fact, it is, when divided among individual car-riders, so infinitesimal as not to be ponderable. This, after all, would be but the difference between an extraordinary year in the amount of demands to pay liquidated claims and the average. Experience in the business suggests that year by year such elements of expense average proportionately about the same. On the basis of business done in 1912, an increase in another year of 100 per cent in liquidated claims over the amount paid in that year would distribute less than one-eighth of a cent to the paid ride. Besides, such imponderable burden would be carried only by that comparatively small number of car-riders who happen not to have sustained that relation at the time, sustained by most a few years previously, when occurred the events fundamental to the delayed liquidations; the vast majority of car-riders would be but carrying their own loads.

"Provisions in Sections 10, 15 and 21 of the ordinance, which are urged as, inferentially at least, suggesting the maintenance of such a reserve, the majority regard as simply definitive of the duties and powers of the city street railroad commissioner and of the duty of the company relative to a full exposition of all matters affecting its business and of the scope and application of an increase in operating allowance, respectively, and as having no effect either to put a special or peculiar meaning upon the expression of Section 21, 'surplus . . . remaining unexpended,' or even by remote inference to furnish excuse for such a reserve. The majority is aided in the interpretation of this part of the ordinance both by the consideration that if the maintenance of such a reserve over an expiring ordinance year was intended, it would have been an easy task for the experienced street railway men who participated in the framing of the measure to have made provision therefor in a few plain words, and by the fact shown in evidence that a definite attempt to incorporate such a provision was as definitely repelled by the Council.

"The answer of the majority to the question, therefore, is in the negative, and its recommendation is that the sums, as of March 1, 1913, in these two reserves be placed forthwith to the credit of the interest fund.

#### BALANCE IN THE INTEREST FUND

"The question propounded as No. 1 by the city, and next considered by the board, namely, 'Was there \$700,000 or more in the interest fund as of April 1, 1913?' presents some difficulty in the way of a categorical answer, at least as to the exact amount in the fund at that date. Apparently there was then in the fund, or should have been, an excess of the amount named.

"A practical and grave difficulty occurs in an attempt to follow the provisions of the last two paragraphs of Section 23 in determining the state of the fund at any month. The method of computing the deductions for 'accrued monthly payments,' as prescribed in the ordinance, is found to be not only unnecessarily intricate, but somewhat defective in its failure to suggest a basis to which the scale of deductions may be applied. We are assured that the reasons actuating the framing of these provisions no longer

exist and we see in them now clear opportunities for vexatious and fruitless controversy. Some of the differences now obtaining between the city and the company respecting the state of this fund have arisen because of the impracticability of these provisions.

"While the method respecting deductions used in the present instance by the company does not approach as nearly to the ordinance method as that followed by the city's computators, the former is in reality fairer and more nearly approximates the condition in which the interest fund should be found. After deductions from it which this board recommends are made, the interest fund will be less than \$700,000.

#### ORDINANCE ALLOWANCES FOR OPERATING EXPENSES AND MAINTENANCE

"The second question of the city reads: 'Has the Cleveland Railway Company a legal right to exceed the allowance for operation and maintenance and renewal stipulated in amended ordinance No. 16238-A, without the consent of the city or the award of a board of arbitration?' It appears that there is an apparent over-expenditure (which, in the opinion of the board, is a better term than the ordinance expression 'deficit') in the operating fund of \$286,834.31, and in the maintenance, renewal and depreciation fund of \$349,462.42, each as of April 1, 1913, and the question strikes at the legitimacy of this situation.

"Considering the operating fund first, the question must be answered in the affirmative. Section 21 provides in terms that an increase of the operating allowance may be agreed to or ordered through arbitration 'to make good any deficit.' We do not feel, however, that in this provision may be found warrant for any over-expenditure which the business judgment of the company's officers alone may justify. The spirit of the ordinance, as an attempt at the fullest public regulation, and one which we think underlies especially the provisions for a stated allowance for operation, necessitates the view that, when once the company, tacitly at least, accepts an allowance by appearing to act under it, the same should be by it regarded as a substantial curb upon its expenditures for operation; that the discretion of its officers to exceed this limitation should not exist except where emergencies arise or conditions come about which were clearly and reasonably not in contemplation when the allowance was made. When either of these situations obtain, and a justifiable demand for expenditure beyond the allowance confronts the company, the latter should acquaint the city with the facts and then charge the city with responsibility either under an agreement or through an award for an increase.

"While the ordinance reserves to the company the right to manage its affairs respecting operating details unhampered by veto in the city, the fact that an allowance limitation is provided for at all suggests a clear duty upon the company to keep actually within it, when once fixed, until it can carry the burden of proving that it should be increased. Any other construction tends to weaken the measure and make of that feature which appeals to public confidence a sham and idle word.

"When some emergent condition confronts the company, as a public calamity, a great accident, a strike, or some other contingency, from which extraordinary increased expense results, some situation whose approach no sign foretells, the fact itself is the company's justification to over-expend its allowance in the interest of the good service which the ordinance requires it to give the public, and of this fact and its responsibility to treat the company fairly respecting the consequences the city has full notice. The burden of proof of the necessity to over-expend is easily sustained by the company.

"Whenever the company, on the other hand, sees impending a change of conditions which makes operation, in its judgment, more expensive, a duty, it seems to us, under this ordinance devolves upon it to give the city timely

notice thereof, which notice should particularize the items or range of enlarging expenses. Such a specific setting forth of the impending particular increase would afford a highly desirable and convenient issue in clear and specific terms, facilitating either an agreement with the city respecting the same or an arbitration, which should be promptly demanded in case of disagreement. The company's diligence in this respect, if it makes a case, will entitle it to an allowance to operate retroactively, covering the period of incurrence of the increased expenses, and thus to make good a deficit; but it is intolerable that this ordinance should be interpreted, based on the one expression only in Section 21 that an allowance might be increased to 'make good a deficit,' to justify the company in continuing over a substantial period a course of over-expenditure, and after the fact, although carrying the apparent burden of justification, to put the city to the trouble and embarrassment of questioning a multitude of minute details in transactions, perhaps long past and involved with other matters, out of which such over-expenditure occurs. Such a situation casts the real burden of proof upon the city, where it does not belong.

"It is believed that a better situation would have obtained in the arbitration now concluding, acting as it is upon controversies respecting over-expenditures which were foreshadowed, according to the company, as early as February, 1912, and which have continued increasingly since that time, had it been instituted at the company's instance many months prior to its initiation on April 14, 1913.

"With regard to the suggestion that to hold the company bound to keep within the allowance which it accepts, except under the conditions considered above, will impair the confidence of investors in the company's securities, this ordinance, taken as a whole, so fully safeguards the company's invested capital, when the provisions of the instrument are fairly considered, that it seems to us that any construction upon it which places unequivocally and emphatically upon either party in active interest, the city government or the company, the obligation to deal fairly with the other and the ordinance provisions and its spirit, and thus to avoid embarrassing controversies, will increase rather than diminish the confidence of investors in the company.

"Section 21, in its last sentence, reads: 'No renewal or replacement charged to maintenance, depreciation and renewal account shall be made by the company until it has been approved by the City Council or by the city street railroad commissioner when thereunto duly authorized by the Council to act.' A limited power of supervision and control over the expenditure of the allowance for maintenance, renewal and depreciation thus appears to be in the Council or its duly authorized agent. So far as the Council may be charged with consent for renewal expenditures which, added to necessary maintenance outlay, produce an over-expenditure of the gross allowance, the city's question No. 2 is unnecessary. Otherwise, the consideration which we give to the question, so far as it relates to over-expenditure in the operating fund, applies to the maintenance, renewal and depreciation fund when the company, having knowledge of the expenditures approved by the Council which it proposes to make for renewal or replacement, undertakes to expend for ordinary maintenance a sum which produces, added to the renewal or replacement expenditures, an over-expenditure in the gross fund, and the company, under these circumstances, should exercise the same diligence in seeking the city's consent or an award as we suggest the ordinance imposes upon it with reference to the operating fund, when it deems the allowance insufficient for present conditions.

#### TRUSTEE STOCK

"The fourth question submitted by the city is: 'Shall the capital stock of the Cleveland Railway Company held in

the name of Horace E. Andrews, trustee, be sold and the amount realized therefrom be used in the purchase of such extensions, betterments or permanent improvements as may be mutually agreed upon between the company and the city, and shall the dividends on said stock from March 1, 1910, to date be placed to the credit of the interest fund?

"In the judgment of the board, this stock in the hands of Trustee Andrews is part of the company's property, and should, through a sale or other disposition of it, be exchanged for that which enhances the physical condition of the company without adding to capital value. The earnings of these securities should be put to the credit of the interest fund.

#### SURPLUS OF OLD COMPANIES

"By stipulation of the parties to this controversy, the fifth question of the city, 'Shall the surplus set up on the company's balance sheet as "old companies" be disposed of by writing down the capital value of the company to the extent of the amount of said surplus?' is answered. We embody the stipulation in this award and make its terms our conclusions as follows:

"Question 5 submitted by the city. Agreed statement re surplus, old company, Jan. 1, 1913, \$323,340.34. Credit balance. (Indorsed: O. K. Baker, H. J. Crawford.)

"This is the balance remaining of the balances which were brought over from the old companies at the time the books of the Cleveland Railway Company were opened about March 1, 1910, and which represented the difference between the assets ascertained at said date and the known liabilities at the same date, plus the capital value as fixed by Judge Taylor.

"There were, however, certain assets and certain liabilities having their origin prior to March 1, 1910, which had not been ascertained, and this amount was left open to take care of future bookkeeping adjustments necessary to be made when such additional assets and liabilities, existing March 1, 1910, had been finally determined.

"There have been charged against this balance payments made on account of a final liquidation of old injury and damage suits and other expenses and claims which antedated March 1, 1910, but which had not been settled at said date. There are still pending certain liabilities and old injury and damage suits, tax claims, etc., which may have to be paid at some future date when definitely adjudicated, and said payments will then be charged against the above balance.

"If, after the final determination of all pending claims and liabilities of every kind and character antedating March 1, 1910, this account shows a credit balance, said credit balance will represent the excess of assets over liabilities plus the capital value as determined in the ordinance, and if this account shows a debit balance, after all liabilities as of March 1, 1910, have been liquidated, then said debit balance will represent a deficiency between the assets and all liabilities, plus capital value as of March 1, 1910.

"We agree, as disposing of this question, that on March 1, 1916, or as soon thereafter as all cases then pending against the company involving taxes or claims having their origin prior to March 1, 1910, shall have been finally determined, the balance then remaining, whether debit or credit, shall be written off by writing up or down the book value of the property of the company without affecting the capital value as defined by the ordinance.

#### CHARGES FOR SCRAPPING POWER EQUIPMENT

"Question 6 of the city reads: 'Shall the charges against the maintenance and renewal fund, due to the scrapping of part of the company's power equipment, when such scrapping has been authorized by the city, be equally distributed over the entire period of time defined by the contract between the Cleveland Railway Company and the Cleveland Electric Illuminating Company for the purchase of power?'

"The board unanimously answers this question in the negative.

#### INCREASE IN OPERATING ALLOWANCE

"Dealing with the first question submitted by the company—'Should the present allowance for operating expenses as defined by the ordinance be increased, and, if so, in what amount?'—we unanimously determine that there should be an increase of 0.6 cent per car-mile, making an allowance of 12.1 cents per car-mile, effective March 1, 1913.

"This increase seems necessary, due to enhanced cost of labor and other considerations.

"By a recommendation hereinafter made we provide for the so-called deficit in the operating allowance in another way.

#### ALLOWANCE FOR MAINTENANCE, RENEWAL AND DEPRECIATION

"We now reach the last question considered by the board, the second propounded by the company: 'Should the present allowance for maintenance, renewal and depreciation be increased, and, if so, in what amount?'

"The board realizes the vital relation of the maintenance, renewal and depreciation fund to those provisions of the ordinance which demand that the securities and capital of the company shall be maintained without impairment, but we are unable from the evidence at hand to answer satisfactorily the question presented.

"The provision from Section 21 which we have quoted heretofore is an amendment to the ordinance of date July 10, 1911. Of the alleged over-expenditure for maintenance, renewal and depreciation, amounting, according to the company's books, to \$323,597.04, March 1, 1913, and increased by \$25,865.38 during the ensuing month, by far the greater amount, doubtless reaching \$300,000 (the exact figure not being presented, but the amount was \$295,818.77 during the first six months of the measure's operation), occurred when the city did not have the supervision over outlays for renewal or replacement now enjoyed by it. It may be argued that since the amendment the additions to the over-expenditure out of the fund were with the constructive consent of the city, because, having knowledge of the expenditures out of the gross fund for maintenance, it consented to replacement and renewal outlays which, added to known maintenance expense, over-expended the allowance, wherefore the results since the amendment indicate that the allowance is possibly too small.

"It is the opinion of the majority of the board (Mr. Duffy dissenting) that we start, however, with the presumption that the average allowance will provide an adequate maintenance, renewal and depreciation fund, because officers of the company, having long experience, accepted this appropriation in the framing of the measure.

"We have in evidence uncontradicted opinion testimony, from ocular consideration only, that the present physical condition of the company's property is not under 70 per cent of its reproduction value, which is the condition the ordinance seeks to maintain through the allowance in question. Against this we are shown a series of computations, based on the application of an assumed rate of depreciation, which may or may not be accurate, and upon the company's method of bookkeeping in distributing expenditures between so-called ordinary maintenance and renewals, which computations exhibit apparently a very large depreciation below the minimum of 70 per cent in physical condition. Without at all questioning the accuracy of these figures, upon their assumed bases, a majority of the board is of the opinion that they do not constitute satisfactory evidence of the necessity for an increase, and that, in presenting them alone, the company does not sustain the burden of proof upon it on this proposition. The majority, therefore, answer the question in the negative.

#### DEFICITS AND A CLEAN SLATE

"As to both of the so-called deficits, it appears to be highly desirable that as soon as possible a clean slate should

be started, even through the application of some extraordinary remedy. It was to be expected that the first years of the operation of so unique a measure as this ordinance would produce real differences of opinion in its meaning and friction between the parties thereto, which are not necessarily referable to a failure to attempt to meet its spirit as understood. Wherefore the suggestion for bringing about a new start, now to be made, if adopted, should not establish a precedent.

"We unanimously recommend that, because this arbitration may be clearing up at least some uncertainties of construction through which over-expenditures have come into being, the Council authorize the transfer forthwith from the interest fund to the operating fund of the amount necessary to balance the over-expenditure therein, as of March 1, 1913, and also authorize the transfer from the interest fund to the maintenance, renewal and depreciation fund of the amount necessary to balance the over-expenditure therein, as of March 1, 1913, making said second transfer in such amounts, from time to time, as may be possible without reducing the interest fund below the sum of \$400,000. And we further unanimously decide and award, as an alternative to the action of the Council on the above recommendation, that, each, the operating and maintenance, renewal and depreciation allowances, be, and they shall be, increased, in default of such action by the Council, to such amounts respectively as will balance said over-expenditures in said funds, respectively, by Feb. 28, 1914. This action may be taken for this one time only without, in our judgment, doing violence to the ordinance, which in terms charges to the interest fund some of the burdens of an arbitration, and without affecting the stability of that fund as fundamental to the rate of fare now in force. Only the extraordinary situation now existing, however, justifies this expedient.

#### NO OVERHEAD EXPENSE IN RENEWALS

"Theoretically, some overhead expenses should be apportioned to renewal and replacement, and to capital, to the relief of operating and maintenance expense. In the unique circumstances which result from the ordinance before us, however, we believe the practice of the company, not to attempt such apportionment, to be favorable to the car-riding public, for other considerations than that, in addition to the fact that to do so but an arbitrary rule could be followed, its application would entail additional clerical labor and afford a chance for perhaps vexatious disputes.

#### CONCLUDING INJUNCTION

"We have approached the consideration of the questions submitted to us with an appreciation of the important relation our duty bore to the working of the ordinance and to the welfare of both the company and the public. We have endeavored to construe the provisions relating to these questions with reference to the mutuality of interest on the part of the city, representing the car-riders, and the company, and with the feeling that to secure to the public the largest power 'of regulation in the interest of good service and the best street railroad transportation at cost,' on the one hand, and safeguarding to 'the owners of property invested in street railroads security as to the property and a fair and fixed rate of return thereon,' on the other hand, were of equal consideration, neither having a preponderating importance over the other. We can only hope that some obstacles against the interest of both public and company have been removed as a result of this arbitration, and that as this ordinance, in a way, takes a fresh start, the concluding injunction upon the company, the public, the press and present and future city officials, to treat it and each other fairly, so eloquently laid down by Judge Tayler, in his Chamber of Commerce speech, on the eve of the initial operation of the measure, may govern its application in the future."

The decision is signed by the three members of the board, Judge John M. Killits, C. Nesbitt Duffy and A. B. du Pont.

## ACCIDENT ON CALIFORNIA ROAD

Brief mention was made in the *ELECTRIC RAILWAY JOURNAL* of June 21, 1913, page 1125, of the accident on the San Francisco, Napa & Calistoga Railway, Napa, Cal., on June 19. A two-car train from Vallejo running at high speed collided head on with an electric car from Napa on a curve a mile north of Vallejo. The train of two cars tore half way through the single car. Thirteen persons were killed and two were severely injured. Others received minor hurts.

The collision occurred at a point where there is a long wide curve and the view is obscured by a clump of trees which breaks the flatness of the country. The motorman of the train and P. F. Herbert, roadmaster of the company, were among those who are reported to have succumbed at once to the injuries which they received in the wreck of the train.

The accompanying illustration shows the extent of the damage to the cars which were in collision. Conflicting statements were made by the two conductors and the train dispatcher at Napa following the collision. The conductor of the northbound Calistoga flier is reported to have made a statement substantially as follows:

"My train was delayed because of loading freight. Be-



Wrecked Cars Shortly After Collision

fore starting, however, I went into the 'phone booth and called the dispatcher at Napa, asking for orders. The dispatcher told me 'All right, go ahead.' I naturally supposed we were to pass the southbound at Collins, and signaled the motorman to go ahead. The dispatcher did not tell me to sidetrack at Hatch."

The conductor of the southbound train is quoted as follows:

"We were on time when we reached Collins. Following a rule of the company, I 'phoned the dispatcher at Napa. He told me to proceed to Hatch and pass the northbound there. I repeated the order back to him and he said 'All right,' so I gave the motorman the signal to proceed, thinking, of course, that the northbound would receive similar orders."

The statement attributed to the dispatcher at Napa follows:

"I gave Conductor Patten of the southbound his orders when he 'phoned me from Collins, telling him to meet the northbound at Hatch. The conductor of the northbound should have 'phoned me before starting from Vallejo for orders. He neglected to do so. I had the orders ready for him. His neglect was manifestly the cause of the wreck."

# Papers at the Central Electric Railway Association Meeting

A Meeting of the C. E. R. A. Was Held June 25-27 on Board a Steamer on the Great Lakes—Abstracts of Two of the Papers Are Published, Together with the Question Box of the Central Electric Railway Accountants' Association

The Central Electric Railway Association and the Central Electric Railway Accountants' Association held their June meeting on board the steamer *City of St. Ignace* on June 26-27, the steamer leaving Toledo, Ohio, on the afternoon of June 25. Abstracts of two of the papers which were presented during the meeting are given in the following paragraphs.

## SOMETHING ALONG THE LINE OF PHYSICAL AND INTANGIBLE VALUATION AS COVERED BY RECENT LEGISLATION

BY ROBERT B. RIFENBERICK, CONSULTING ENGINEER DETROIT UNITED RAILWAY

Mr. Whitney, the chairman of your subjects committee, asked me to prepare a paper on "Valuations" to be read at this meeting. He said: "In regard to the subject of 'Valuations,' my thought was for something along the line of physical valuation as covered by the recent legislation," and added, "This will be quite an important subject for the various transportation lines in the near future."

If I should take literally Mr. Whitney's suggestion—"Physical Valuation"—for my text, the subject could reasonably be exhausted with a few words or definitions, for Webster defines physical as "relating to material things," and valuation as "the act of setting a price." Thus physical valuation is merely "the act of setting a price on material things."

To illustrate: Assume that a physical valuation is to be made of your transportation utility. What does such a valuation imply? It implies only "the setting a price on the material things" of which your utility is composed and on the labor necessary to assemble such material into a completed whole ready to perform the functions for which it was brought into being. Thus any one so charged with the making of such a valuation of your property must necessarily and logically direct his efforts to accomplish this specific aim, regardless of whatever other values there may be in the property. I prefer, rather, to believe that Mr. Whitney, in common with many others, has fallen into an error of expression as to what was really running in his mind when he made his suggestion. I am glad, though, that he so expressed his thoughts, as the opportunity is thus afforded to call your serious attention to the fact that there is a far reach between the mere physical value and the full fair value of your several properties.

Many times in the near future some or possibly all of you may have occasion, in conferences, discussions and in public expression, to refer to the valuation or value of the utilities, or departments of the same, in your charge; therefore in order that there may be no misunderstanding as to what you mean, particularly in the public mind and in the minds of public officials, when you refer to the valuation or value of your property, be explicit, direct and to the point and speak of such as the "physical and intangible valuation or value." For surely this is what you will expect, and if necessary demand, that any valuation made, under authority of "recent legislation," shall include.

With apology to Mr. Whitney, we will express his thought and this text as "something along the line of

physical and intangible valuation as covered by recent legislation"; though I question if some, at least, of the "recent legislation" does, or was really intended to, cover and include the intangible values, which are as much a part of the value of every existing utility as are the material and labor values of same. In fact, it is some of this intangible expense first made that later makes possible the physical expense.

## REPRODUCTION COST

Several so-called methods of valuation have been advanced, and some used, by which to ascertain, for the purpose of "rate-making" or "rate regulation," taxation and for municipal purchase, the "fair value" of public utilities; but the one method almost universally used by the leading engineers engaged on valuation work is the reproduction cost method. This method has also received the stamp of authority from the United States Supreme Court, United States District and Circuit Courts, state courts and state railroad and public service commissions generally, as the determining factor of value for "rate-making" or "rate regulation," so I will confine myself to a description of this method of valuation and to some of the values necessary to be recognized and used to produce the reproduction cost of your several utilities.

The reproduction cost method may be defined as an estimate of the cost that would be incurred in constructing entirely new a property, identical with an existing property, based on the physical conditions existing at the time of the original construction, in so far as such conditions can be determined or judged.

The first thing necessary in making an estimate of such cost is to take an inventory of the existing physical property, after which it is assumed that such property does not exist, but that one is to be constructed in accord with this bill of materials, i. e., this inventory. In taking an inventory considerable care and judgment should be exercised to make it as full, clear and complete as possible, for this inventory is the foundation on which the whole valuation must rest and from which the many items of material units are made on which to apply so-called unit prices.

## DETROIT APPRAISAL

While testifying early last fall, in the United States District Court at Detroit, relative to the inventory and appraisal of the Detroit street railway system, I was asked the following question: "State now the plans and methods which you formed for taking the inventory of these several departments and the way in which the force was organized to carry out that plan?"

I found that the organization of the company consisted of five main or general departments, viz., the executive department, the operating department, track department, mechanical department and the power department. The track, mechanical and power departments are the ones which would have particularly to do with an inventory, as the physical property is in the direct charge of these departments. Under the track department the track and structures are inventoried, under the mechanical department the rolling stock, car shops, air charging and air compressor plants, and under the power department the overhead construction, transmission and distribution lines, power plants, battery and substations. Therefore the inventory was divided into the three general headings of

"inventory track department," "inventory mechanical department" and "inventory power department," to which I added "inventory general" to take care of real estate and buildings.

In the organization of the large force that would be necessary to take an inventory of this magnitude, I had free rein from the management to engage as many and any whom I thought necessary for this work, and I concluded that the men who were in constant every day connection with the property itself would be more capable than anyone whom I could secure from the outside, as such outside assistance could not possibly be as familiar with the property as must be the men in the regular employ of the company who had in many cases been with the property for years. I took this subject up with each of the heads of the general departments and had them assign men out of their departments who were most familiar with the different schedules of property to be inventoried, and they were put to work inventorying every item of physical property that they could ascertain. These men went into every schedule in as great detail as they could and were instructed to be sure and get everything that they could see and to be very careful not to put anything in their inventories that they could not at any time put their hands on and say, "There is that item in the inventory." These men listed only the property comprised in the particular sub-department or branch of the work of which they had charge and had had for long years past.

This work has been spoken of as being "noteworthy for the completeness of its inventory, which goes into the minutest detail, and for the excellence of the maps and drawings which accompany it and show, not only every standard type of track, rail, all buildings and machinery, but every piece of track and overhead work on the entire system." That such an inventory was made possible is due to these employees of the company, who worked with great energy and loyalty, and sometimes to the limit of their physical endurance.

Necessarily in all inventories there will be some omissions of property, for some of it is bound to be overlooked, as it is impossible to make a thorough examination of buried structures, but to this day no one has pointed out or found any item listed in this inventory that did not actually exist at the time of the inventory. Our experience in this work fully confirms the conclusion I reached before getting up the organization for the purpose of taking the inventory, and I know of no better plan or organization that could be provided.

Owing to a local situation or condition that arose during the time our inventory was being taken, it was necessary shortly after it was started to attach to the same the several prices of materials and unit values. The work of placing the material price was put in charge of the purchasing department, and the prices used were the market prices of material as of the date of the inventory, except in the case of copper and cement, two items which fluctuated frequently in price, and for these the average price for five years preceding 1908 was taken. The materials were priced f.o.b. cars Detroit, to which was added, where applicable, the haul and labor necessary to construct same into a composite whole or unit.

Unit prices were studied in great detail and were applied in every case where the material and labor items entering into same could be determined. In this study I had most material assistance from, and many discussions and arguments with, the heads of the three physical departments, namely, Mr. Kerwin, of the track department; Mr. Potter, of the mechanical department, and Mr. Burdick, of the power and overhead department. These gentlemen also called in and advised with their assistants relative to the kind and amount of labor necessary to accomplish a particular unit of construction. Thus every unit price was

thoroughly analyzed and discussed before any final conclusion was reached and the price adopted.

In making up specifications for unit prices, for instance, of the track construction, a great deal of the data was obtained from the records of the track department, but in every case where there was a question as to the character of any of this construction the fact as to what it consisted of was determined by going out on the ground and opening it up to see what was actually there.

The present street railway system of Detroit is made up of numerous constituent properties that were originally built as separate and independent units, and it was found that a great many of the plans of the buildings were not on record; therefore, in order to take care of this situation, there was added a general department. This department was placed in charge of one of the most prominent building contractors in the city and he engaged five of the leading architects to assist him, and they measured up all of the buildings inventoried and from such measurements made detailed plans and bills of material, making these schedules of the inventory as exhaustive as the others.

#### OTHER PHYSICAL VALUES AND VALUES OTHER THAN PHYSICAL

After arriving at the material and labor cost of the property inventoried there should be added:

(1) A "contingency" item (generally applied in the form of a percentage) to provide for necessarily incomplete inventories, for it is impossible to include each and every item of physical property, as some of it is bound to be overlooked, and further it is impossible to make a full and complete examination of buried structures.

(2) An "incidental of construction" item (generally applied in the form of a percentage) to provide for unforeseen difficulties in executing the work of construction, as the material and labor estimates are based on certain conditions and, almost without exception, difficulties are encountered which could not possibly be foreseen that often change the entire character of the construction and thus increase its cost above that estimated; also to provide for the extra cost of piecemeal construction, i.e., making extensions and additions to the original construction at numerous different times, the original construction of the utility being assumed to have been built in one continuous operation; also to provide for adverse weather conditions and delays in receiving and handling material and to provide for maintenance and depreciation of property during construction.

(3) An "employer's and public liability insurance" item to provide for the liability in case of accident to labor employed on construction, and in case of accident to the public during such construction. Where the labor cost has been separately computed from that of material the amount of this item is based on the premiums paid, per every \$100 of labor pay roll, to insurance companies handling this character of insurance; otherwise it is applied in the form of a percentage. The liability exists and must be provided for either by the utility carrying it itself, or by having it underwritten by a responsible insurance company.

(4) A "builder's risk or casualty insurance" item to provide against the loss of buildings by fire, wind or otherwise during their construction. This item is generally based on a cost of so much per \$100 of labor pay roll.

(5) An "architect's fee" to provide for the cost of plans and specifications and for the superintendence of the buildings during their construction. This item is generally applied as a percentage of the cost of the buildings, based on the usual rates charged by architects in the territory in which such buildings are erected.

(6) An "appreciation" item to provide for the solidification of the roadbed, which becomes more and more solidified with time. The embankments and slopes become settled and better able to resist the action of the elements and also the ordinary surface drainage. Without question



a roadbed, the longer it is in use, becomes more valuable than when it is first constructed.

(7) An "acquiring land" item to provide for the expense of juries, commissioners or arbitrators in condemnation cases; to provide for the cost of removing buildings not included in property purchased; to provide for the cost of plats, abstracts, notarial fees, recording deeds and examination of titles; to provide for the cost of abutting damages, surveying land and for agents' commission. This item is generally applied to the cost of real estate and land in the form of a percentage of such cost.

(8) A "contractor's profit" item to provide for a general contractor's profit for properly assembling and constructing the vast number of elements of property into a homogeneous whole, to do which the experienced general contractor's method is reasonably considered the cheaper in the end, for such a contractor is fully equipped with plant, machinery and tools for such construction, whereas the utility in embryo has not the experience necessary to successful economical construction, and further it would have to make an investment in a contractor's plant, machinery and tools for which it would have no use after such construction was finished. Thus the expense to the utility for this inexperience, plant, etc., would be greater than what it would have to pay an experienced contractor to do the same work. This item is generally applied in the form of a percentage of the cost of such construction.

The foregoing several items of expense are as much a part of the physical property cost as the bare labor and material cost to which these expenses must be added to reach a physical reproduction cost.

#### OVERHEAD CHARGES

Having obtained the physical reproduction cost of the utility, the next and final step necessary to arrive at the total reproduction cost is to apply the so-called overhead charges or intangible values.

(1) A "brokerage" charge to provide for the expense necessary to be paid to a responsible bond broker, firm or banking house for an investigation and report on the proposed utility and for underwriting the securities of such utility, i.e., for securing investors in such securities.

(2) A "discount on bonds" charge to provide for taking care of the amount of the difference between what the bonds are sold for and the face value of such bonds. It has been contended that this item of discount on bonds is not a proper capital charge. Against this contention I have no argument to make except to say that until such time as provision can be made for the amortization of such discount, it must remain as a capital charge, and that it can only be amortized when the earnings of the utility are adequate to provide an amount yearly that will, at the maturity of the bonds, have entirely wiped out this discount. If such a provision is not so made, the integrity of the investment will be lessened by the amount of such discount. It is necessary to make this discount on bonds charge in order to show the total amount of the same, so that the yearly sums to be set aside to provide for this original capital expense can be ascertained. This charge is usually stated in the form of a percentage which represents the difference between the face value and the amount less than face value for which such bonds can probably be sold.

(3) A "development cost" charge to provide for the losses entailed during the years that intervened to bring the utility to a self-sustaining basis—i.e., a paying basis. Properly to bring out and show this cost requires that the early financial history of the utility be known, but as the records of the early days of such properties were at best very meager, especially as compared with those required of us to-day, and as the present-day public service utility is usually composed of several of these early enterprises, it is often very hard to determine this charge from actual accounts.

In cases where the records necessary to establish this development cost charge are not available it is safe to assume that it existed and to provide for it hypothetically or with reference to a similar utility of which such history existed.

One of the early pioneers of the street railway industry once told me that the only records he ever had were kept in his hat in the shape of bills, which he paid in their order when enough money finally came in to enable him to pay one; then he destroyed the bill to make room for another. He said: "It was fortunate for my creditors that I wore a big plug hat in those days or some of them would probably have lost out, as the bills accumulated faster than an ordinary hat could hold them; for my income was always several years behind my expenses." He also told me that the way he acquired his street railway property was that he sold to the company then owning it horses with which to run the road and eventually had to take the road to pay for the horses, and when he found out what he was up against he tried to give the whole "shootin' match" away but could find no one willing to relieve him of it so he just had to hold on until finally after eight or ten years the tide turned and he was at last able to wear a more modern hat.

(4) An "engineering" charge to provide for the cost of the engineering necessary to the proper design and construction of the utility, i.e., consultations, determining the character of the work and the manner in which or methods by which it shall be done, preliminary and final surveys, general and detailed working plans, specifications and contracts, supervision of construction, field work during construction, monthly and final estimates and such other items of engineering as would naturally come within the sphere of the general duties of an engineering department.

(5) A "franchise value" charge to provide for the remainder value of the net earnings that the utility would produce at the rates fixed in the franchise between the date of the appraisal and the maturity of its franchise.

(6) A "going concern value" charge to provide for the value that is in any existing utility by reason of its being self-sustaining and in a successful and efficient operating condition. This represents the cost to get the business to bring the utility to the condition of having such a value.

(7) A "hazard" charge to provide for the extra and often extraordinary expense imposed on a utility by political shysters, yellow journals, anarchistic, socialistic and public ownership demagogues, who in this insane day and date seem to have the evil power to make it cost a utility from 10 to 30 per cent or more to raise the money necessary for the betterments and extensions to its property that are for the benefit and convenience of the public, when such money in more sane times would be forthcoming for 100 cents on the dollar instead of only at the large discounts that are demanded in these troublesome and unsettled times.

(8) An "interest during construction" charge to provide for the interest on the capital required for the construction of a utility, which is necessarily idle during such construction period but drawing interest. This interest charge is usually computed for the length of time it is assumed it will take to construct the utility complete. Full interest, at the prevailing rates, may be allowed for half this period or half interest for all the period on the assumption that all the capital will be in use half the time or half the capital during all the time of the construction period.

(9) A "legal expense" charge to provide for the legal expense incurred during construction, such as the paying of general counsel and attorneys, cost of printing briefs, legal forms, testimony, reports, etc., special attorney fees, notary fees, witness fees, expense of taking depositions and all other legal and court expenses.

(10) An "organization and administration" charge to provide for the expenses involved in the organization and

administration of the construction of a utility, which would include incorporation fees, salaries and expenses of executive officers, clerks in the general offices engaged on construction accounts or work, surety bond premiums, upkeep of the general offices, purchase of materials, printing, stationery, etc.

(11) A "promotion" charge to provide for the cost of promoting and the preliminary expenses necessarily entailed in the pioneering of the utility.

(12) A "taxes during construction" charge to provide for the cost of taxes and licenses levied and paid on property belonging to the utility during the construction period.

(13) A "working capital" charge to provide for the purchase of materials and supplies, pay rolls and such other expenses of operation necessary to render service in advance of the payment for such service. An amount for this purpose must originally be provided from capital though later it is kept uniform from earnings when such earnings are adequate for this purpose.

As some of the above charges are more or less correlated, it may be consistent and proper for the more practical application of same to condense them into the accompanying table of general intangible or overhead charges.

#### GENERAL INTANGIBLE OVERHEAD CHARGES

(A) Engineering (4)	
(B) Organization and administration	{ Promotion (11) Organization and administration (10) Legal expenses (9) Taxes during construction (12) Development cost (3) Going concern value (6)
(C) Carrying charges—Interest	{ Interest during construction (8) Brokerage (1)
(D) Financing	{ Discount on bonds (2) Hazard (7) Working capital (13)
E) Franchise value (5)	

With the foregoing thirteen overhead or intangible charges I have endeavored in a general way at least to cover as best I could the range of intangible values, but it is quite possible that in the short time I have had to write this paper several items of intangible value have been overlooked.

#### DEPRECIATION

Depreciation does not enter into this discussion of physical and intangible valuation, inasmuch as it should not fairly have any part in the lessening of the value of a utility for rate-making or rate regulation purposes.

It is true that in the valuation of all public service industries, made to date, except in one or two rare instances, depreciation of physical property, and in some instances of overhead charges, has been used to determine the so-called present value of such utilities.

Depreciation of investment is a parody on the word reasonable as used in this sense in connection with rates. It is wrong in principle and unjust in application.

Depreciating property investment to determine reasonable rates (?) is in fact confiscation of property, and not only this but it actually penalizes the very existence of the utility.

To illustrate: Assume that the utility which you are representing here to-day does not exist but that it is about to be constructed, and you appeal to your rate-making power for the schedule of rates to prevail when your utility is ready to furnish service. In such a case would not the rates, for the service proposed to be rendered, be necessarily based on 100 cents on the dollar of investment and not on any presumed future depreciated value? In fact, would not a rate have to be made adequate enough to take care of and thus protect the investment against any such future depreciation? If this is logical, then by what strength of reasoning can the so penalizing of existing property be justified? Is it not, rather, a self-evident fact that any utility which does not appreciate with time, rather than depreciate, must sooner or later cease to exist, otherwise it could no longer remain a factor for the purpose for which it was brought into existence?

The only excuse that can be offered in justification for such an arbitrary depreciation of investment is that such existing utility has been purposely allowed to deteriorate in order to pay excessive profits to speculators or stockholders. Such speculators may have had their day, but that day is past. Fortunately in very few instances have they been able to hit the electric railway industry.

Even if this has been the case in some few instances, does this depreciation of investment method of retaliation put the utility back into the condition it should be to render efficient service? Would not the more reasonable and just method be still to permit a fair return on the full 100 cents on the dollar of investment, with the provision that all of this return shall be used to put such deteriorated property back into its normal operating condition and efficiency before dividends shall be resumed on the investment?

Sober thought, it would seem, must reach the conclusion that depreciation of property investment, for the purpose of rate making, is wholly wrong in principle. That such depreciation has been applied in past valuations for rate-making purposes is not a necessary precedent to future like valuations. A continued wrong does not make a right.

I challenge anyone to show where in any valuation made to date, for the purpose of rate-making, and from which depreciation has been deducted, depreciation funds have been provided, from the rates so determined, in such amount as would restore to the investment this sum which has been so arbitrarily taken from such investment, by means of this first use of depreciation. In every case only enough has been allowed to keep the utility up to its thus determined so-called present value. Much of this theoretical depreciation is necessarily deferred maintenance, for as yet no one has been able to define satisfactorily where maintenance ends and depreciation begins.

Some day the public, the courts and possibly the valuers themselves will "get wise" to the fact that the more a utility is thus theoretically depreciated, the higher must be the rates to take care of such ill-advised and arbitrary depreciation in order to restore to the investment every dollar that is honestly in such investment. Some day they may also learn that interest on the full investment, plus an amount, spread over a long period of years, reasonably necessary to provide for what practical depreciation takes place over and above a high standard of maintenance, will produce lower rates for the service efficiently rendered than could be produced from rates that only provide interest on so-called present or depreciated value, plus the necessary larger amount yearly required to provide for this greater depreciation, for it is self-evident that a property maintained at only 60 or 70 per cent of its cost depreciates far more rapidly than one maintained to 85 or 90 per cent of its cost. It also costs considerably more to operate a property in a 60 or 70 per cent condition than it does one in an 85 or 90 per cent condition.

#### RECENT LEGISLATION

As to the closing part of my text—"the recent legislation"—I take it that Mr. Whitney refers more particularly to the Adamson-La Follette bill as passed by the present Congress and to the Shively-Spencer utility commission act recently passed by the General Assembly of Indiana, which went into effect on May 1 of this year.

The act of Congress purports to provide for "a valuation" of the several classes of property of the common carriers, but the purpose of such valuation is not disclosed either in the title of the act or in the act itself. I have a strong personal impression that this so-called valuation is for political purposes and endless litigation. It surely reads this way and any valuation carried out in accord with the directions as specified in this act surely means litigation, for such a value placed on the property

of the common carrier is confiscation pure and simple.

The title of this act clearly provides for "a valuation," but in the body of the act itself there are three specific and distinct valuations provided for, namely: (1) a valuation of the original cost to date; (2) a valuation of the cost of reproduction new; (3) a valuation of the cost of reproduction less depreciation.

While it is true that the act states that "the commission shall in like manner ascertain and report separately other values, and elements of values, if any, of the property of such common carrier, and an analysis of the method of valuation employed, and of the reason for any difference between any such value, and each of the foregoing cost values," nevertheless a careful analytical study of the act must lead to the conclusion that any valuation made under the strict provisions of this act is still restricted to a physical valuation.

Again, any valuation made in strict accord with the provisions of this act penalizes an existing property, for it provides for the cost of reproduction less depreciation and does not provide for the replacement of such depreciation nor does it provide for any appreciation of such property.

The act also provides that "any aid, gift, grant of right-of-way or donation" shall be made note of and reported. The inference of this is that the same will be deducted from the valuation found, as this is the only use to which such information could be put, for otherwise it can have no bearing on the value of the property. Any reduction in value on such account is unjust, for it is no more than reasonable to presume that "any aid, gift, grant of right-of-way or donation" was made for value received or to be received in some form or other by the givers. In the case of free transportation by the common carrier, courts have universally held that such is given for value received.

The absolute power with which the commission is clothed by this act is too arbitrary and too severe to afford fair justice to the victims of the act, should the commission or any of its numerous agents be men politically inclined or men of not very broad mind or judgment. The act does not provide for embodying in the valuation anything more than physical value, and the other so-called values are merely side issues which will afford a great field for the politician to exploit his theories of watered stock and bonds.

Attention can be called to numerous other questionable features, which if valid may and will involve great unfairness and injustice to those utilities subjected to any such valuation as herein proposed. If the intention of this act was to make a fair, full and complete valuation of the physical and intangible values of the properties of the common carriers of this country, it would not have been difficult to make the act so read.

The act of the General Assembly of Indiana is one creating a public service commission and establishing the powers and duties of the same. It also provides for the valuation of property of public utilities. The section on the "valuation of properties" is short, concise and clear. It is reasonable and cannot do other than afford fairness and justice to a utility that is valued under its terms. This section provides that: "The commission shall value all the property of every public utility actually used and useful for the convenience of the public. As one of the elements in such valuation, the commission shall give weight to a reasonable cost of bringing the property to its then state of efficiency."

This, I believe, is broad enough to, and was intended to, include any or all of the physical and intangible values that I have just described. The provisions in this act made for the care of depreciation are fair, reasonable and just, and if observed by the utilities and required to be carried out by the commission will maintain the property in such a state of upkeep that the value of the same

at any time, plus the amount of the depreciation fund, will make the investment 100 cents on the dollar. Can it be said that the Congress of this great republic has less ability than the General Assembly of Indiana? As far as a comparison of these two acts go, the question is answered in favor of Indiana.

#### VOUCHER INDEXING SIMPLIFIED

BY GEORGE L. FORD, AUDITOR EVANSVILLE (IND.) RAILWAYS

Taking up the position of auditor as an entirely different occupation from anything I had formerly been connected with, I found it required a great deal of time and study to systematize properly all of the office details. This duty was rendered doubly difficult in view of the fact that the road was five or six years old and the accounting end of the business had remained in the same place it was when the road started. Through the generosity of many of the members of this association, who supplied me promptly and liberally with their fund of information, we have been able to get the accounting department up to a grade of efficiency that will compare favorably with other departments of the road.

The system of voucher indexing which I am to explain is not original with me, as several of our members are using something similar to this at the present time, but I feel that many of our members would be more than pleased with the results if they would investigate its merits.

In order to accommodate our purchasing department we were compelled to file our vouchers alphabetically. This was very inconvenient to the auditing department, so we finally decided to file our vouchers numerically and card-index them alphabetically, which was a great improvement, but even this did not entirely prevent the possibility of passing a bill through the second time or overlooking a bill that had already been passed through. There was also another feature which the purchasing department desired, and that was to have all bills from one firm together.

In building up this new voucher system we have changed our voucher to a sheet 8½ in. by 14 in., the original sheet being perforated in the center. The lower portion of this voucher is used as a check, being printed for the signatures of the proper officials. The top portion of the original voucher is used for copying the distribution of the different accounts, from which postings are made to the detail ledger. An auditing record is also made on the top portion of the original voucher, such as the date and by whom the voucher is made, date received for audit and by whom examined, date entered in voucher record and by whom, date of postings and by whom.

The top portion of the original voucher is attached to the first carbon copy (for which we are using white paper) and filed numerically, without folding in one of the common paper arch files. These are left in this file until the end of the month, or till any time that may be desired, and then are bound in book form with one of the regular binding machines used for this purpose.

The third carbon copy, for which a different color paper is used, is alphabetically filed with the bills attached. We are filing these in a folder with two prongs, so that when the bills are punched they will fit down over these two prongs and be held securely in place. This, we consider, will reduce to a minimum the possibility of a bill being misplaced. In addition to this, we take the further precaution of going through our voucher record for the month and check against the bills filed alphabetically to see that none have been omitted.

In the event of cross-indexing being desired, we insert as many extra linen sheets as are needed, and note on the audit end of the original voucher what cross-indexing has been done. By making extra carbon copies as much cross-indexing can be done as is desired.

I think that one of the chief advantages to be gained in this system is the improbability of a possible duplication of any voucher escaping attention. I found that the card index filled a long-felt want, but in the event that a voucher is written up for the same amount as one already indexed, it is necessary to look in the files for the first voucher to see that it is not being duplicated. The above method will save the time spent in this work, for the copy of the first voucher will be quickly at hand and the full details of the two vouchers may be compared. This method will also prevent errors in transcribing, as the index will be composed of carbon copies of the vouchers with the bills attached, and there will no longer be errors in dates, numbers or amounts in the index.

### CENTRAL ELECTRIC RAILWAY ACCOUNTANTS' ASSOCIATION

BY A. F. ELKINS, CHAIRMAN; F. K. YOUNG AND F. PANTEL

Questions Nos. 1 to 19 inclusive were answered in our report of Nov. 26, 1912, copies of which were placed in the hands of our members.

Question No. 20. To what account should penny vending machines and sanitary drinking cups be charged when purchased? The penny vending machines are purchased at so much each, with a perpetual lease agreement, the same to be returned to the manufacturer whenever the use of the cups is discontinued. The cups are placed in the vending machines and distributed in the stations and on the cars by means of penny slot.

Answer: Expenses incident to the placing of drinking machines and cups on cars should be charged to account No. 63, "miscellaneous car service expenses." If the machines and cups are used in stations, this would be a proper charge to account No. 65, "station expenses."

Question No. 21. To what account should be credited the revenue received from these penny cup machines?

Answer: To account No. 10, "station and car privileges."

Question No. 22. How should paving assessments be treated on the books of an electric railway? That is, when notice is first given by the city, and the company desires to take advantage of the instalment plan. Also, when actual payments are made.

Answer: If the company desires to take advantage of the instalment plan, and this is not infrequently done, it would be proper to open up a special account, called "deferred paving assessments," and credit to this account the monthly proportion of the annual charge, as determined from the tax bills, charging the same to account No. 10, "paving," under road and equipment. When semi-annual payments are made, charge the amount to deferred paving assessments. A separate record may be made of the interest accrued, if desired, by charging the same to account No. 41, "interest," under road and equipment. The annual charge, with interest, covering paving assessments may be secured from the county treasurer and placed on the tax bills. All taxes and assessments may be paid by the issuance of one voucher to each county.

Question No. 23. What operating expense account should be charged for the repairs of a 6600-volt transformer stepped down to a voltage of 110, in order to furnish electric light for a rented station, the transformer being located outside on the poles?

Answer: When the current generated is changed from one voltage to another, by means of a transformer, for outside purposes, expenses to and including the transformers should be charged to account No. 22, "transmission system."

Question No. 24. What operating expense account should be charged for labor and material in repairing

meters, transformers and wiring in connection where the carrier furnishes a small amount of power to patrons along its line?

Answer: All expenses incident to the maintenance of a system where the current generated is unchanged in voltage should be charged to account No. 23, "distribution system." Note: It is generally understood that the present scheme of distribution of operating expenses provides that where the current is of any other than the operating kind, or voltage, this is a proper charge to No. 22. If, however, the current is sold unchanged in voltage or kind, then this would properly be classed as distribution and charged to No. 23.

Question No. 25. A company operates a light and power department and a railway department. The railway department has a plant of its own, but receives, from time to time, power from the light and power department plant. Should the light and power department credit these receipts from the railway department to its earnings or its operating expenses? State names of accounts credited and on what basis.

Answer: If the company owns and operates both a railway and light and power department, the cost of power furnished by the light and power department to the railway department should be charged on the books of the railway company under the various sub-heads as "other operations—dr." It would seem that this cost is a proportion of operating expenses chargeable to conducting transportation, in which case the debit would be to account No. 58. The amounts charged to the railway department should be credited in the books of the light and power department through "other operations—cr." to the accounts affected. If the system of accounting does not provide for the separation of operating expenses, then the entire charge should go to account No. 56, "power purchased." Note: This question is answered on the assumption that the company actually owns both departments.

Question No. 26. What disposition should be made of an amount of money (\$25) found on car which was never claimed by the owner?

Answer: Credit should be given account No. 19, "miscellaneous," under operating revenues.

Question No. 26 concludes the list of questions submitted by our secretary to date. The answers given to the various questions reveal a keen knowledge of the classification as adopted to our local requirements. No general system of accounts will ever be devised that will be so elastic as to cover every condition.

### ELECTRIC RAILWAYS OF HOLLAND FOR 1911

The statistics covering the electric railways of Holland for 1911 show nine street railways, four interurban railways and the 40-mile single-phase Rotterdam-Hague-Scheveningen Railway, which was described in the ELECTRIC RAILWAY JOURNAL Oct. 2, 1909. The statistics in the following table do not include this line.

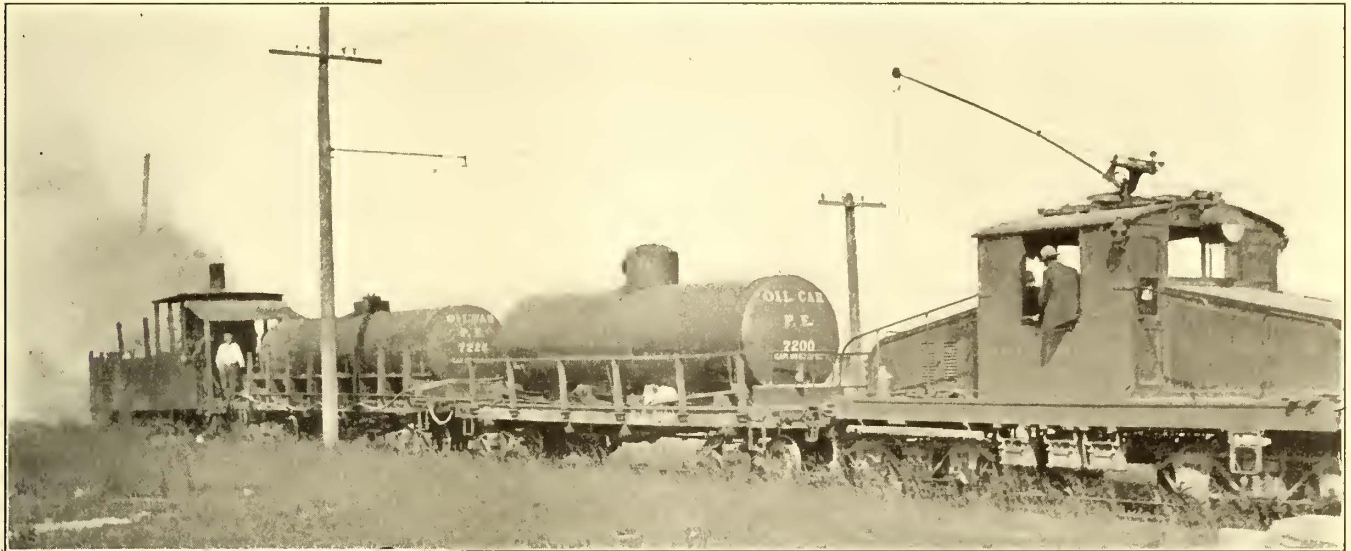
HOLLAND ELECTRIC RAILWAY DATA				
City	Passengers	Miles of Route	Annual Rides per Inhabitant	Gross Earnings
Amsterdam	78,520,000	84.5	135	\$1,610,000
Arnheim	1,280,000	14.0	20	44,000
The Hague	33,320,000	62.5	114	860,000
Groningen	2,150,000	9.3	28	49,500
Haarlem	2,630,000	8.0	38	54,250
Leyden	.....	13.9	...	.....
Nymwegen	640,000	5.7	11	.....
Rotterdam	29,860,000	67.3	64	677,500
Utrecht	4,740,000	18.9	39	100,500
Amsterdam-Haarlem-Zantvoort	2,460,000	34.6	...	225,000
Enschede-Glanerburg	590,000	9.2	...	19,000
Utrecht-de Bilt-Zeist	530,000	14.6	...	45,750
Zeist-Driebergen	140,000	6.4	...	3,500

Meter (39.4 in.) gage is used by the Groningen, Haarlem, Nymwegen, Amsterdam-Haarlem-Zantvoort, Enschede-Glanerburg and Zeist-Driebergen lines. The others are standard gage.

**WEED BURNER IN LOS ANGELES**

The Pacific Electric Railway, which operates 972 miles of track in the district surrounding Los Angeles, Cal., has found the question of the removal of weeds on its right-of-way a serious one. Vegetation is luxuriant in Southern California, and various methods have been employed to dispose of the weeds which grow on and between the tracks.

The burner car is provided also with wing burners and shields which can be raised or lowered and are designed for burning the weeds on the sides of the right-of-way. About twenty burners are used. It is found that the burner can do efficient work when hauled at a speed of from 4 m.p.h. to 5 m.p.h., and it does not damage either the ties or the center poles used on the center-pole double-track construction. Such slight charring as may be caused



Los Angeles Weed Burner—Side View Showing Electric Locomotive, Tank Cars and Burner at End of Train

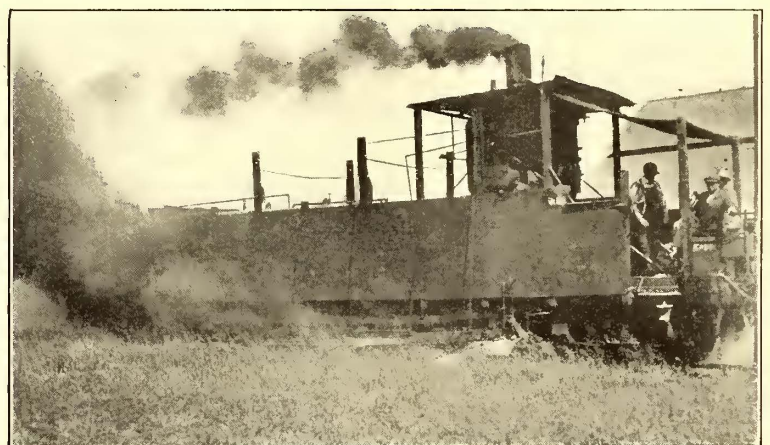
The company is now using the burner illustrated in the accompanying engraving, in which the flame is produced from crude oil and steam, which are mixed before being admitted to the burners.

The burner occupies an entire flat car, 46 ft. in length, which is used as the last car of a four-car train consisting of a motor car or locomotive, a car to carry the water for producing the steam, a car to carry the oil used in the burner and the burner itself. The steam is generated in an upright boiler, and after being mixed with the oil in the mixer, which is about 1 ft. in length by 1 ft. in width, it is

to the ties or the poles is rather a preservative than otherwise, and the flame makes an excellent detector for rotted wood in either poles or ties. The car is followed by two section gangs, which see that the fire does not spread to adjoining property.

The crew required on the train is as follows: motorman, conductor, two brakemen, one engineer, two helpers, one lookout, one fireman and one roadmaster of the division. In addition there are the two section gangs already mentioned.

The company burned last year about 300 miles of track



Los Angeles Weed Burner—Side and Rear Views of Burner in Operation

conducted to the burners which are set between the trucks. The bottom of the car is protected by a shield of metal covered with asbestos slab. This shield is carried under the axles and extends the entire width of the car and is provided with deflectors at each end to protect the wheels from the heat. At the same time a stream of water is kept playing on the car journals to keep them cool. Other streams of water are thrown from the rear of the car to put out any fire which may be generated by the heat.

at an operating cost of \$4.65 per mile. This figure includes labor and materials but not depreciation or interest on the investment. Under the conditions existing on the Pacific Electric Railway, it has been found necessary, in order to keep the weeds down, to destroy them by burning four or five times during the year.

The operation of this burner is conducted under the direction of the way department of the Pacific Electric Railway, Los Angeles.

### MEETING OF THE CENTRAL ELECTRIC RAILWAY ASSOCIATION THIS WEEK

The June meetings of the Central Electric Railway Association and the affiliated Central Electric Railway Accountants' Association were opened on the afternoon of Wednesday, June 25, under the most auspicious circumstances. As mentioned in previous issues of the *ELECTRIC RAILWAY JOURNAL*, the associations had inaugurated the novel procedure of holding the meeting on board a steamer on the Great Lakes, and the popularity of the idea was well demonstrated by the large number of individual members who had arranged to be present during the sessions. Many of the members were accompanied by their wives and families.

The steamer *St. Ignace*, of the D. & C. line, had been chartered for the trip and left the dock at the foot of Madison Street, Toledo, Ohio, at 3:30 p. m. on Wednesday. The weather was most propitious, and every circumstance, including the large attendance, pointed toward one of the most successful meetings ever held by the two associations, not only with regard to the interest in the technical papers, reports and discussions, but also with regard to the enjoyability of the leisure hours between the various business sessions.

The route was down the Maumee River to Lake Erie, thence past Put-in-Bay, across Lake Erie and through the Detroit River to Detroit, Mich. The steamer reached Detroit late on Wednesday evening, and a number of delegates came on board there as the stop had been arranged especially to pick up those who found it more convenient to commence the trip from that point. From Detroit the route extended into Lake Huron, a stop being arranged at Harbor Beach, Mich., in order to accommodate those who were unable to complete the entire trip. After the stop at Harbor Beach a sail up Lake Huron had been arranged for the major part of Thursday, the return trip commencing late Thursday afternoon, or in time to land the delegates at the starting point at some time during the evening of Friday, June 27.

On Thursday morning at 9:30, with the steamer well out upon Lake Huron, the first business session of the Central Electric Railway Association was called to order by President A. W. Brady. R. N. Hemming, chairman of the committee on standardization, presented a report on the controlling dimensions of trolley wheels, a standard train signal system, the heating and ventilating of cars and the mounting of radial couplers. This report was accepted and will be sent to the various members for consideration and action at the next meeting.

On Thursday also papers were read on "Recent Developments in Car Control," by F. E. Wynne; "Valuation of Electric Railway Properties," by R. B. Rifemberick, and "The Claims Department," by E. F. Schneider. Mr. Rifemberick's paper and one on "Voucher Indexing," by G. L. Ford, are published in abstract elsewhere in this issue, together with the Query Box of the Central Electric Railway Accountants' Association. The other papers and an account of the proceedings will be published in the next issue of this paper.

The mechanical department of the Nashville Railway & Light Company, Nashville, Tenn., has installed an individual exhaust system in connection with its commutator slotting machine. The system has not only been found desirable for removing the dust from the slotting tool but has proved profitable because the dust is sold for 8 cents per lb. The amount of dust collected from the slotting necessary with the 150 cars owned by the company produces about \$25 annually. The exhaust system is composed of a No. 0 Sturtevant centrifugal fan, direct-driven by a 1/2-hp motor. The exhaust duct extends from the slotting saw to a tank which serves for dust storage.

### NOVEL ROUTE SIGNS ON THE PEORIA (ILL.) RAILWAY

The Peoria Railway Company has recently installed route signs of a novel design on the city cars in Peoria, Ill. To advise the public regarding the new system of car indications, a card map showing the various route lines of street railway drawn to an exaggerated scale and the sign indication applying to each was pasted in each car. A fac-simile

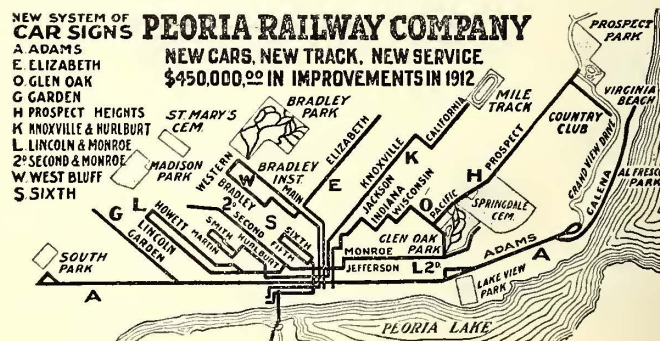


Peoria Route Signs—View of Signs in Place on Cars

copy of this card also was published in the daily papers for a period of several weeks. A reproduction of this card is shown in the accompanying illustration.

The new sign is a triangular prism built of light structural angles and 18-gage sheet metal, the base being shaped to fit the contour of the car roof. Two signs are mounted at right-hand diagonal corners of each car, and the right-angle faces of the signs are set parallel to the front and sides of the car. These two faces are 17 in. x 18 in. in size and take a 12-in. initial letter and 3-in. letters in the printed destination. All letters are perforated with 5/16-in. holes which permit reflected light from a single 16-cp lamp installed between the letters on the sign front to illuminate them at night. The interior of the sign is painted white to intensify the indirect letter illumination, making it possible to read the sign easily at 500 ft. during either day or night. The lamps in the two signs are in series with the lamps in the car and are controlled by the same switches.

The lettered panels are interchangeable as guides in the



Peoria Route Signs—Card Map Posted in Cars

sign frame permit them to be removed and replaced by any other destination sign, in case it becomes necessary to change a car's routing. A complete equipment of sign panels is kept at each carhouse, and each crew is required to see that the correct indications are in place before the car is taken for a regular run.

It is believed that these signs will be useful to residents as well as to strangers, as they will enable the destination of the car more easily to be identified.

**GASOLINE FREIGHT AND SWITCHING LOCOMOTIVE**

A gasoline freight and switching locomotive has been recently built and delivered by the McKeen Motor Car Company to the Minneapolis & Northern Railway, a line extending from Minneapolis northwest to Anoka, Minn. The maximum capacity of the locomotive is approximately twenty loaded freight cars. The power-generating apparatus is the McKeen standard 200-hp, six-cylinder, air-starting and reversible gasoline engine, with such modifications in the transmission as are necessary to adapt it to heavy-duty freight service.

The engine is water-cooled, the cooling system consisting of two radiators located on the cab roof and a pump driven from engine crank shaft by a Morse chain. The cast-steel frame which carries the engine is mounted transversely upon two cast-steel truck sides, to which it is so rigidly united as to produce practically an indestructible truck structure. The end sills or buffer beams are secured to the side frames and all couplers and air apparatus are M. C. B. standard material.

The power of the engine is transmitted by means of a sprocket on the crank shaft through a 5-in. Morse silent chain to a sleeve working free on the axle upon which is mounted a multiple-disk friction clutch. This friction clutch is of heavy design and large dimensions with suitable lubrication and acts as a means to ease the load on the engine. The power from the friction clutch is delivered to the forward driving axle by a jaw clutch. The power is either transmitted through a series of herringbone gears to



**Gasoline Freight Locomotive Pulling Train**

produce heavy tractive effort and high torque for starting purposes or else is transferred direct to the driving wheels. By thus magnifying the torque of the engine great starting effort is obtained, but when the locomotive is once in motion higher economy can be obtained by cutting out the gears and using the direct connection. A sprocket is keyed to the end of each driving axle for a 4-in. Morse silent chain which connects the two pairs of drivers.

Changes of speed and reversing the locomotive are effected by means of air-actuated mechanism, controlled by small handles or levers in easy reach of the operator, and this affords considerable facility to the motorman in switching in congested yards as compared with the operation of an ordinary steam locomotive.

The air supply of the locomotive is a necessary and important feature. In addition to an air pump driven by an eccentric on the crank shaft of the main engine, a gasoline power air compressor is furnished entirely separate from the locomotive power. This is not only economical but simplifies operation of the driving mechanism for switching service. Air pressure is used for actuating the engine and transmission, for whistle signals, for the air brake, and for starting and reversing the engine. The gasoline tank is of

120 gal. capacity, enough fuel for at least ten hours' ordinary service.

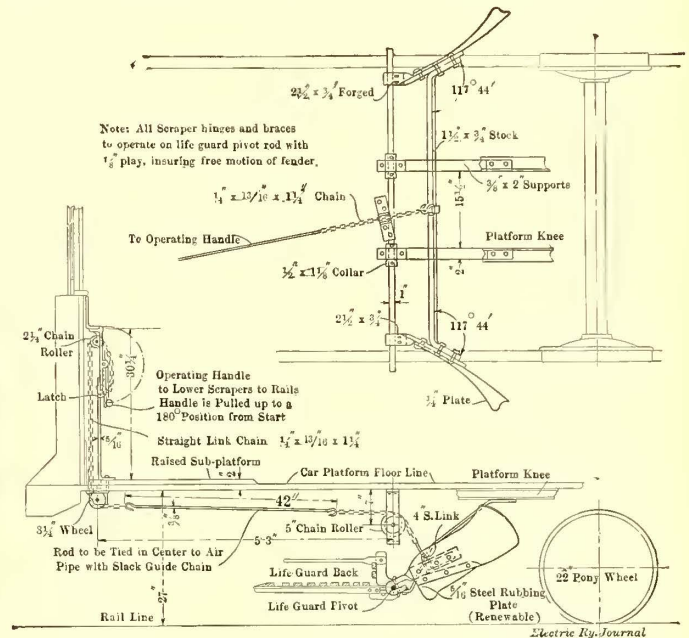
The principal dimensions of the locomotive are as follows:

Engine..Six cylinder, 10-in. bore, 12-in. stroke, variable speed, reversible, 200 hp.	
Length of wheelbase.....	6 ft. 6 in.
Length over pulling face of couplers.....	17 ft. 1½ in.
Width over all.....	9 ft. 6 in.
Diameter, drivers.....	42 in.
Weight on drivers.....	43,000 lb.
Speed with engine at 350 r.p.m.....	Low, 8 m.p.h.; high, 22 m.p.h.

No fireman is required on the locomotive, and the single operator, on account of the air-operated control, is relieved from all fatigue incident to the handling of the heavy links of the steam locomotive. The short wheelbase and wide windows in the cab are also points which it is believed will add materially to the efficiency of the gasoline freight and switching locomotive.

**SNOW SCRAPER FOR LIMITED CLEARANCE SPACE**

The International Railway Company recently purchased nearly 300 near-side cars, which are being fitted with scrapers designed in the mechanical department of the company. The clearance between the pony wheels of the for-



**Buffalo Snow Scraper for Limited Clearance Space**

ward truck and the backs of the life guards is too small in these cars to accommodate the usual design of scraper. The one shown in the accompanying illustration was, therefore, manufactured in the company's shops, placed on all of the near-side cars and is giving excellent satisfaction. It will be noted that the foundation of the rigging is a 1½-in. x ¾-in. steel cross-bar with bent ends. To this are bolted the hinges, which are forged from 2½-in. x ¾-in. steel, and the renewable 5/16-in. steel rubbing plates. The hinges hook over the life-guard pivot rod and are held in place by cotter pins. The rubbing plates are raised and lowered by means of a chain attached to the middle of the cross-bar. After passing over idler pulleys, the chain terminates in an operating handle conveniently located back of the front dash.

The Berlin (Germany) Street Railway has recently installed its first fully vestibuled motor car. This car also differs from the previous standards in providing a separate entrance and exit. The car has twenty-six seats and according to the police provisions the permissible standing room is eight or ten persons on each platform and two inside the car.

# News of Electric Railways

## Provisions of Massachusetts Public Service Commission Measure

Under the Washburn bill, which has become law over the veto of Governor Foss, as reported in the *ELECTRIC RAILWAY JOURNAL* of June 7, 1913, and which goes into effect July 1 next, the powers of the Massachusetts Railroad Commission are expanded and its name is changed to the Public Service Commission. The features of the bill follow:

The commission is enlarged to five members, one to be appointed each year for a five-year term, by the Governor with the consent of the Council. The chairman's salary will be \$8,500 per annum, and that of other members \$8,000.

The commission will have jurisdiction over telephone and telegraph companies (instead of the highway commission as heretofore), and over railroads and street railways and steamship service within the Commonwealth, but not supervision over electric lighting and gas companies or municipalities supplying gas and electricity to their residents. The jurisdiction over these latter organizations is still retained by the present Board of Gas & Electric Light Commissioners.

Three members of the commission will constitute a quorum for transaction of business. Undiscriminatory and non-preferential charges by common carriers are provided for, and all free passes for transportation within the State are restricted or prohibited in a manner similar to that in which such passes have already been prohibited in interstate traffic.

The commission may appear before public tribunals and the interstate commerce commission to carry out authorized functions or when it believes a common carrier subject to its supervision is violating any provision of the interstate commerce law.

Section 15 provides that "a railroad corporation may issue shares of capital stock, bonds, notes or other evidences of indebtedness for the purpose of funding its floating debt or for any other lawful purpose," and then proceeds to state that it "may" mortgage any part of its property, including property afterward acquired. This, of course, permits the issue of plain bonds without mortgage. Any mortgage executed shall secure all indebtedness previously issued, and indebtedness may be issued to an amount not exceeding twice the capital stock actually paid in.

All issues of indebtedness of a maturity of over twelve months are subject to the commission's approval as to amount and issue price, but security issues for refunding or making of additions and improvements for property situated outside of Massachusetts, if authorized there, need not have the approval of the Massachusetts commission. A report, however, must be rendered to this commission before the issue can be made within the State.

The act prohibits the issuance of free passes or reduced transportation except to certain closely limited classes, such as employees, letter carriers, policemen, firemen and employees of the Legislature, the commission, etc. Authority to specify the number of men required to man trains is also included, and in general the act retains all the existing powers of the Railroad Commission, with broadening duties as above outlined.

All rates and charges of the common carriers must be filed with the commission and it may fix same. Its powers are mandatory. The Supreme Judicial Court is to have jurisdiction to review, amend or enforce rulings of the commission.

The new commission, which replaces the Railroad Commission, was appointed by Governor Foss on June 25. The membership of the board and the periods of service are: Frederick J. McLeod, Cambridge, five years; George W. Anderson, Boston, four years; George P. Lawrence, North Adams, three years; Clinton White, Melrose, two years; George W. Bishop, Newton, one year. Messrs. McLeod, White and Bishop were members of the Railroad Commission.

## Mayor Marx Submits Temporary Settlement Plan

On June 24 Mayor Marx of Detroit, Mich., presented to the Common Council of that city the street railway ordinance proposing a plan of settlement with the Detroit United Railway. He feels that the measure will meet all needs until municipal ownership becomes possible. The plan provides that the company shall operate on a flat 3-cent fare and give universal transfers, make adequate extensions, pay back taxes and rentals amounting to \$628,976 which are claimed to be due, pave the streets between all tracks, accept a revocation of all existing franchises and agree to sell the property to the city at a price to be approved by the people.

The agreement differs from the Lawson plan in that it will not be submitted to the people for approval. The Mayor has power to complete the negotiations. It is his intention to have public hearings on the proposition and to invite the officers of the company to be present and discuss each point. It is said the Mayor intends to cite the recent finding of the United States Supreme Court in the Fort Street case against the company.

Frederick F. Ingram, charter commissioner, has proposed two important changes to the municipal ownership section. One of them authorizes the city treasurer and controller to establish a savings account system to encourage the sale of street railway bonds. He believes that people will take advantage of this to accumulate sufficient money to buy bonds. The other gives the street railway commission power, when acting in conjunction with the Common Council, to enforce all ordinances and rules relative to privately or municipally owned lines. It is intended as an aid to the Council in enforcing the ordinances.

The Detroit, Jackson & Chicago Railway will have until June 23 to begin paving between its rails on West Huron Street. In the event of its failure to do so, the city threatens to stop the operation of cars through the city and prevent the operation of the remainder of the road between that point and Jackson and Kalamazoo, as this is a portion of the main line. It is claimed that the ordinance provides for paving and that the company has failed to carry out this part of the requirement.

## The Cleveland Aftermath

H. J. Davies, secretary of the Cleveland (Ohio) Railway, is preparing figures showing the expense of operation since March 1, 1913, the date to which the board of arbitration completed its investigation. J. J. Stanley, president of the company, stated on June 20 that the expense has been in excess of 12.1 cents per car mile, the new allowance made by the arbitrators. It is expected that the company will present the figures to the City Council and ask an additional increase. Peter Witt, street railway commissioner, and E. B. Haserodt, chairman of the street railway committee of the City Council, both assert that such a request will be refused. Mayor Baker has refused to comment on the matter. The portion of the report of the board of arbitration under which a demand of this kind can be made is as follows:

"The company at any time seeing an impending change of conditions which makes operation, in its judgment, more expensive, a duty devolves upon the company to give the city timely notice."

F. H. Goff, president of the Cleveland Trust Company, who was prominent in the settlement of the dispute during the Johnson administration, was quoted by the *Cleveland Plain Dealer* of June 21 to the effect that the board of arbitrators could have reached no other decision as to the company's exceeding the ordinance allowances for operation and maintenance. He said that it was Judge Taylor's intention that these allowances should be exceeded only in emergencies.

A resolution calling upon A. B. duPont to return to the Cleveland Railway the \$5,000 which he received as a fee for serving on the board of arbitration was defeated by the City Council on June 23. Mayor Baker, who addressed



the Council in behalf of Mr. duPont, declared that Mr. duPont rendered no service to the city as consulting engineer for the light plants while serving on the board of arbitration. He explained that the sum involved in the proceeding was equal to \$1,000,000 to the people of Cleveland and that the expense of arbitration was small compared with the service rendered.

#### New Chicago Elevated Relief Plan

An ordinance has been introduced before the transportation committee of the City Council of Chicago, Ill., to give authority for an extension of elevated railroad platforms to accommodate more trains and longer ones. The elevated companies thus abandon their plan of lengthening the platforms to accommodate two six-car trains, which would have accommodated 1224 cars an hour. Under the plan submitted the capacity will be 1110 cars an hour.

On account of the passage of the utilities measure by the Legislature the Council is at a loss how to proceed regarding rerouting and other problems relating to the betterment of transportation facilities. If Governor Dunne vetoes the bill all arrangement for improvements, including subways and through routing of elevated lines and consolidation of surface lines, will be pushed rapidly. If he signs the measure, which places all public utilities in the hands of a commission, it will be futile for the Council to take any step to alleviate present conditions.

J. J. Reynolds, of the Harbor and Subway Commission, has reported that the commission had submitted to engineers for the railroads figures on the proposed subways to replace the elevated loop structure. He said the estimates of the commission were that the subways would cost about \$17,000,000.

#### Newark Terminal Offer Open Until Oct. 1

Thomas N. McCarter, president of the Public Service Railway, Newark, N. J., has stated that the offer made by the company in regard to the construction of an extensive terminal in Newark, holds good only until October. Mr. McCarter is quoted as follows in regard to the project, which has been reviewed at length in the ELECTRIC RAILWAY JOURNAL:

"When the members of the Board of Works said it was ready to grant the thirteen franchises application was made, but the board does not seem to want us to build the lines as it has not taken the first step toward the granting of the franchises. We will build these lines as soon as the franchises are granted and an understanding reached regarding the terms. We have laid out the most important project since the water supply. I have \$5,000,000 ready. I have used \$2,000,000 to acquire the necessary property. The rest of the money will be furnished by the bankers as soon as the franchises are granted. I cannot hold the offer open beyond Oct. 1."

#### Decision in Dallas Fare Case

Chief Justice Anson J. Rainey, of the Court of Civil Appeals for the Fifth District, sitting at Dallas, has handed down a decision in the case of the appeal of the city of Dallas, sustaining the ruling of Judge Kenneth Foree of the Fourteenth District Court in granting an injunction on behalf of the Dallas Consolidated Electric Street Railway to restrain the city of Dallas and the City Commissioners from enforcing the initiative ordinance voted on April 3, 1912, providing for the sale of seven street car tickets for 25 cents and for the charging of only a 3-cent fare in cases where passengers are forced to stand.

The Court of Appeals held that the ordinance was invalid because the charter of the city of Dallas grants to the Commissioners of the city and not to the people the right to regulate fares and charges and service of the public utility corporations, and that only after serving notice and giving a hearing. The holding of the Superior Court is that power is granted to the voters of the city to vote on initiative ordinances of a general nature, but that provision does not say anything as to the regulation of public service corporations, and another provision of the charter expressly grants that power to the City Commissioners. The fact

that the criminal ordinance to provide for penalties has never been passed, it was held, does not keep the ordinance from being a law, even though an invalid law, and an injunction was necessary to protect the interests of the street railway against injuries from civil ordinance.

The case came up to the Court of Civil Appeals on appeal of the city of Dallas against the injunction issued and perpetuated by Judge Foree on application of the street railway as plaintiff. The injunction was originally sued out to enjoin the City Commissioners and City Secretary from declaring the vote on the election. On appeal, it was held that that injunction was premature and the City Commissioners immediately canvassed the vote and declared the ordinance carried, about the middle of November, whereupon the company again entered court, praying for an injunction to prevent enforcement of the ordinance, which was granted to the company on Nov. 23.

After quoting certain portions of the original petition of the company or appellee, together with Judge Foree's decision, Judge Rainey's decision, approved by the other two members of the court, holds that the initiative ordinance, if it was a valid ordinance, became effective upon the Board of Commissioners ascertaining and declaring the result of the election. But under the charter, the decision holds, the people had no right to initiate any ordinance having to do with the regulation of the rates of street railways, the general initiative and referendum provisions of the city charter not mentioning the regulation of rates of public service corporations. The decision further points out that paragraph 7, Section 8, Article 2, delegates that duty to the City Commissioners, providing, however, for a hearing, and that no change shall be made except after due notice and hearing. The Board of Commissioners is the only tribunal having such power, it is held, and as there was also no hearing, nor could have been, on the matter of regulation, the adoption of the ordinance in the manner it was adopted makes it invalid. To sustain this holding, the decision quotes from the ruling of the Texas Supreme Court in the case of the Southwestern Telegraph & Telephone Company vs. City of Dallas, 134 S. W., page 321, by Chief Justice Brown.

The decision further holds that although the ordinance passed by initiative vote is void and its enforcement may never be attempted, still it stands on the minutes of the city of Dallas as a law and is therefore a menace to the company. The fact that no criminal ordinance has been passed is held to make no difference. The appellee is entitled to be relieved of the civil injuries under the civil ordinance. These injuries, the decision holds, were sufficiently and fully specified in appellee's original petition for injunction, and the plaintiff did not seek to enjoin the Board of Commissioners from the passage of any ordinance or to interfere with the legal function to legislate for the city, but only to prevent the enforcement of one in existence already and against which the street railway company had no adequate remedy for the injuries to property rights.

#### Tentative Proposition for Sale of Kansas City Viaduct

The bondholders' protective committee of the Kansas City Viaduct & Terminal Railway has submitted a tentative proposition for the sale of the inter-city viaduct to the cities of Kansas City, Mo., and Kansas City, Kan., in return for 4 per cent interest on the bonds. The issue of bonds against the structure is \$3,500,000, and the committee offered to stand a loss of \$1,000,000 in bonds if the two cities would pay interest on \$2,500,000. The offer involves the negotiations for a new Metropolitan Street Railway franchise in the two cities. The interest on the \$2,500,000 bonds at 4 per cent would be \$100,000 a year. The Metropolitan line would be required to use the viaduct and pay \$150,000 a year rental, out of which revenue the two cities would pay the annual interest and divert the remaining \$50,000 a year to an amortization fund to retire the bonds finally. The roadway would be free to all other traffic. The Metropolitan Street Railway formerly used the viaduct for its Minnesota Avenue cars and paid the viaduct company \$60,000, at the rate of 1 cent a passenger. If the Metropolitan Street Railway were to send the Quindaro Boulevard and the Chelsea Park cars also over the structure, the viaduct officials say that the rental

should be \$150,000 a year. The revenue of the viaduct from vehicle tolls has been about \$20,000 a year, which has been absorbed by taxes and operating expenses. In good weather the daily revenue is about \$90. If the viaduct were thrown open to the public and the collecting of tolls and the administration expense obviated, the cost of maintenance and operation would probably be reduced to \$5,000 a year. Then if the two cities took over the viaduct without providing the annual amortization fund of \$50,000 they would have to meet the annual interest charge of \$100,000 and operating and maintenance expense of \$5,000, or a total of \$105,000 each year.

#### Finance Committee for 1913 Convention

The American Electric Railway Manufacturers' Association has announced through H. G. McConaughy, secretary-treasurer, the following list of names of the members of the finance committee for the convention of the American Electric Railway Association to be held at Atlantic City in October:

Scott H. Blewett, vice-president in charge of finance, American Car & Foundry Company, St. Louis, Mo.

Waldo E. Berry, chairman finance committee, Carnegie Steel Company, New York.

John W. Ackley, Thayer & Company, Inc., New York.

Edwin A. Amaden, Carnegie Steel Company, Waverly, N. Y.

C. B. Arthur, Universal Lubricating Company, Cleveland.

M. G. Baker, Cambria Steel Company, Johnstown, Pa.

C. A. Babbiste, *ELECTRIC RAILWAY JOURNAL*, New York.

R. H. Beach, Federal Storage Battery Car Company, Silver Lake, N. J.

C. H. Billings, Westinghouse Traction Brake Company, Pittsburgh, Pa.

W. L. Boyer, Bemis Car Truck Company, Springfield, Mass.

W. C. Cory, Standard Motor Truck Company, Pittsburgh, Pa.

W. C. Dickerman, American Car & Foundry Company, New York.

F. A. Elmquist, Sherwin-Williams Company, New York.

W. H. Forsyth, The Curtain Supply Company, Chicago.

R. H. Harper, Western Electric Company, New York.

H. L. Hawley, Consolidated Car Heating Company, New York.

E. B. Meissner, St. Louis Car Company, St. Louis, Mo.

Will I. Ohmer, Dayton Fare Recorder Company, Dayton, Ohio.

M. J. Phelan, Peter Smith Heater Company, Detroit.

C. J. Record, Galena-Signal Oil Company, Boston, Mass.

J. E. Slimp, Ohio Brass Company, New York, N. Y.

H. E. Smith, *Electric Traction*, New York, N. Y.

E. A. Stillman, Watson-Stillman Company, Aldene, N. J.

W. A. Woolford, General Electric Company, Baltimore.

#### Strike in Birmingham

About a month ago the union carpenters in Birmingham, Ala., went on strike. The strike continued for about two weeks. The master builders declined to grant any demands made by the carpenters and refused to arbitrate their demands. A sympathetic strike of all allied trades was called off after a few days, and at the same time the strike of the carpenters was called off. The master builders then refused to re-employ a small number of the striking carpenters. The unemployed striking carpenters became active in attempting to organize the motormen and conductors of the Birmingham Railway, Light & Power Company, and succeeded in enlisting about thirty-five men. A little more than two weeks ago, an outside organizer succeeded in enlisting about forty additional motormen and conductors. The Birmingham Railway, Light & Power Company discharged all the conductors who joined the union as rapidly as the fact was discovered. On June 20 the motormen and conductors who had been dismissed demanded that the company recognize the union and reinstate all discharged employees. Both demands were refused. Thereupon a strike was called. The city authorities furnished the necessary police protection promptly in antici-

pation of trouble. The strike has been conducted free from all assaults or injury to or destruction of property, and the cars of the company have been operated continuously and normal service has been maintained. The company now has more motormen and conductors in its employ than it actually needs to conduct its business, and has not employed any one to take the place of the strikers. The company employs altogether about 600 motormen and conductors. Fewer than 100 were involved in the strike.

**Extension Agreement in Minneapolis.**—The Council of Minneapolis, Minn., has approved a compromise agreement with the Twin City Rapid Transit Company which provides for the construction of more than 15 miles of new line during 1914.

**Committee on Interurban Development at Atlanta.**—The Chamber of Commerce of Atlanta, Ga., has appointed Wilmer L. Moore, Hollins N. Randolph, M. R. Wilkinson, F. J. Paxton, P. S. Arkwright and Fred Lewis a committee to encourage the construction of interurban electric railways out of Atlanta.

**Strike in Phoenix.**—The motormen and conductors in the employ of the Phoenix (Ariz.) Railway went on strike on June 22 to enforce their demands for the reinstatement of a motorman who had been discharged. Three women who volunteered their services were used for a period of several hours to keep the cars in operation immediately following the strike.

**Meeting of Buffalo Arbitration.**—It was announced on June 23 that the members of the board of arbitration which is to adjust the differences between the International Railway, Buffalo, N. Y., and its employees would not meet until June 26, owing to the fact that Assemblyman Edward D. Jackson, who is a member of the board, was at the special session of the Legislature at Albany.

**Milwaukee Company to Appeal to the United States Supreme Court.**—The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has decided to appeal to the Supreme Court of the United States from the decision of the Wisconsin Supreme Court in the case involving the ticket rate of fare within the city of Milwaukee fixed by order of the Railroad Commission of Wisconsin.

**Action Against Canadian Autobus Company Dismissed.**—An action by D. Robertson, purchasing agent of the Montreal (Que.) Tramways, to prevent the contract between the Canadian Autobus Company, Ltd., and the city of Montreal from being carried out has been dismissed. An appeal, however, is to be made against the judgment of Justice Demers in the Supreme Court. The action was to stop the running of autobuses.

**Electric Railway at Colon.**—The construction of the electric railway in Colon, Panama, was begun on May 23. It will be operated by the Colon Electric Tramway. R. S. Arcia is president of the company, H. Hellinger manager, and Charles Albert engineer. The ties for the roadbed will be obtained from Chepo, Republic of Panama, the rails from the Isthmian Canal Commission and the United States, and the cars and all electrical appliances from the United States. Five cars have already been ordered.

**Sundry Civil Bill with Labor Rider Approved.**—President Wilson signed the sundry civil appropriation bill on June 23, but attached to it a statement explanatory of his action in the face of the fact that the bill contained the provision forbidding the use of any part of a specified appropriation for the prosecution of violations of the Sherman anti-trust law by combinations of farmers and labor unions. The last sundry civil bill was vetoed by President Taft because it contained a clause granting a similar exemption from prosecution to such organizations.

**Abandonment of Route Approved in New York.**—The Public Service Commission of the First District of New York on June 18, 1913, approved the application of the Central Crosstown Railroad to abandon the portion of its route which was formerly operated by horse cars on Seventeenth and Eighteenth Streets between Broadway and Avenue A which was part of the line from the East Twenty-third Street ferry to the Christopher Street ferry. The company is to remove the tracks and restore the pavements at its own expense within three months.

**Examination for Position of Examiner of Accounts.**—The United States Civil Service Commission has announced an open competitive examination for examiner of accounts, for men only, to fill vacancies as they may occur in this position in the Interstate Commerce Commission in the division of valuation and in the division of carriers' accounts. The examination will be held on July 28 and two grades of eligibles will be established with salaries ranging from \$2,200 to \$3,000 and from \$1,860 to \$2,100 per annum respectively. All persons who desire to take this examination should apply for Form 2039 to the United States Civil Service Commission, Washington, D. C.

**Decision in St. Paul Extension Case.**—The Minnesota Supreme Court has reversed the decision of the Ramsey County District Court holding that the St. Paul City Railway must build a line on St. Clair Street. Chief Justice C. L. Brown wrote the opinion. The action was one in mandamus, instituted by the city to compel the company to construct the line in accordance with an ordinance passed on May 7, 1910. The company's answer set forth that no public necessity for the line had been shown, that the order was unreasonable and a violation of its contract with the city and that the action of the Council was arbitrary. To this answer the city demurred and was sustained by the lower court.

**Bids Opened for New York Subway Section.**—Bids were opened on June 24, 1913, by the Public Service Commission for the First District of New York for the construction of the section of the Brooklyn Rapid Transit Broadway subway between Houston and Bleecker Streets and the southern end of Union Square. This subway is already under construction from Trinity Place and Morris Street to half way between Houston and Bleecker Streets, and the section for which bids were received on June 24 was the first on any of the main lines of the dual system to be advertised for competition since the operating contracts were signed. The Dock Contractor Company, New York, N. Y., was the lowest bidder. It bid \$2,578,000.

**House Caucus Against Commerce Court.**—On June 25 the House Democratic caucus voted in favor of the abolition of the Commerce Court and defeated a motion by Representative Broussard of Louisiana providing for its continuance. The resolution adopted by the caucus reads in part: "That it is the sense of this caucus that the Commerce Court be immediately abolished during the present session, due care being taken at the same time to protect and provide for the jurisdiction now exercised by that court over pending and future litigation; and that the committee on rules is directed to bring into the House a rule making in order appropriate legislation for such purpose on any appropriation bill during the present session."

**Action of Commission to Be Contested.**—The Public Service Commission for the First District of New York has been served with a writ of certiorari issued by Supreme Court Justice L. A. Giegerich on the application of the Richmond Light & Railroad Company. The application asks for a review of the commission's orders of March 5, 1913, and March 15, 1913, requiring the completion of the double track on the company's street railroad known as the Castleton Avenue or Brighton Heights line, between St. George, New Brighton and Broadway, West New Brighton, Staten Island. The writ is returnable in twenty days. In its application to the court the company alleges that its franchise permits it to operate either a single-track or a double-track line.

**Income Tax Exemptions.**—To meet the protests of representatives of New York City, Chicago, and other municipalities where electric railways and other public utilities pay part of their profits to the municipality, an amendment has been inserted in the income tax section of the tariff bill exempting the incomes of corporations profits of which accrue to a state, municipality, or other local government. Another important exemption permits corporations to exclude from their returns interest on their indebtedness, even when in excess of their capitalization, in cases where the indebtedness is secured by collateral and is incident to the business of the corporation. By another amendment the undivided profits of corporations and partnerships are included in the income subject to the tax.

**Report Submitted in Montreal.**—G. Janin, engineer to the Montreal City Council, has submitted a report on the tramway congestion to the Board of Control. He has under consideration various schemes submitted by Duncan McDonald, J. P. Fox and others, and states that immediate steps should be taken to procure increased facilities in almost every part of the city. His recommendations include the elimination of all unnecessary stops, placing switchmen at every important junction point, teaching passengers to have their fare ready, the installation of larger signs on cars, relief of congestion on the rear of cars, the prohibition of the hauling of freight in daytime, better supervision of traffic at junction points, the prevention of "short-turning" of cars at the option of the conductor, and the installation of autobus lines to supplement the railway service.

**Decision in Wisconsin Trespass Suit.**—Judge Belden, of the Circuit Court at Kenosha, Wis., decided on June 21 that the Milwaukee Light, Heat & Traction Company had no right to operate interurban cars on the streets of Kenosha. The decision came in a suit brought by the property owners on Milwaukee Avenue, which sought to have the franchise rights of the company declared invalid. The court held that the franchise ordinance under which the city lines were being operated was valid, but that the action of the Council in attempting to confer rights for interurban cars was invalid. He also denied the right of the interurban company to condemn right-of-way for its tracks on the streets of the city, holding that before such an action may be maintained the company must secure a franchise from the Common Council. It is stated that the company will appeal from the decision.

**San Francisco Supervisors Approve Extension of Municipal Lines.**—The Supervisors of San Francisco, Cal., have passed the ordinance committing the city government to the construction of the municipal railway lines and extensions recommended by the city engineer. The routes outlined in the ordinance have their principal terminals at the ferries and the exposition grounds. The cross lines and the extensions include the proposed Stockton Street and Van Ness Avenue routes, the acquisition and improvement of the Union Street line, the extension from Van Ness Avenue and Market Street into the Potrero, through the South Market district, and the Church Street and California Street extensions. An appropriation of \$5,000 to defray the cost of preparing plans and specifications for the proposed lines has been provided by the Supervisors. The ordinance providing for the extensions will be submitted to the voters at an election to be held on Aug. 26, 1913. Approximately 14 miles of double-track road are provided for by the ordinance.

**Subway Construction in Brooklyn.**—The Public Service Commission for the First District has come to an agreement with the Long Island Railroad in regard to the easement rights for the St. Felix Street branch of the Fourth Avenue subway, which passes under the Long Island Railroad station in Brooklyn. The city will pay the railroad \$200,000 for the right to build the subway under the station, and the patrons of the subway will have free use of the stairways, etc., in the railroad station. All that remains to be done now to legalize this route is to get the consent of the Brooklyn Academy of Music. This branch leaves the Fourth Avenue subway at Fulton Street and runs through St. Felix Street and Flatbush Avenue to a connection with the Brighton Beach elevated railroad at Malbone Street. When completed it will be operated by the New York Municipal Railway Corporation in accordance with the provisions of the dual system contract. The proposal to use the right-of-way of the Evergreen branch of the Long Island Railroad instead of Wyckoff Avenue for the Eastern District elevated railroad is under consideration.

**Washington Tax Commission Assessments.**—The State Tax Commission of Washington has completed its assessment for the year of all the operating electric railways in the State. The only changes made are to increase the Pacific Northwest Traction Company from \$1,473,109 to \$2,445,822, because of opening the new line between Bellingham and Mount Vernon, and the increase of the Willapa Harbor Railway from \$50,800 last year to \$124,830 because of new construction. The board decided that the assess-

ments made in the past by the Railroad Commission and the Public Service Commission of the properties of the Puget Sound Electric Railway and Inland Empire Railroad were excessive, but as the law which makes these findings binding on the board will remain in force until June 13, when the new law giving the tax commission full power goes into effect, nothing can be done this year except to recommend that the State Board of Equalization reduce the assessments in August. The tax board valuations must be made prior to June 1. The Puget Sound Electric Railway valuation, made by the Railroad Commission, is \$4,240,000, and the Inland Empire Railroad assessment, made by the Public Service Commission, is \$12,500,000.

## LEGISLATION AFFECTING ELECTRIC RAILWAYS

### ILLINOIS

The passage of the public utilities measure was one of the last acts of the Illinois Legislature. The Senate restored to the bill the "home rule" feature, which was stricken out in the House. The House refused to concur in this amendment and the Senate voted to recede from its amendments. This bill, as passed, provides for a state commission to regulate rates and service and supervise issues of stocks and bonds by utility companies.

Other bills passed at the closing session were Senator Waage's bill, to permit municipalities to own and operate public utilities, and the semi-monthly pay bill which will require interurban and street railways to pay twice a month and to hold back only eighteen days' pay. Governor Dunne signed this bill on June 23. The anti-pass bill was not called up for passage in the House. The Beall bill, to require interurban railways to install toilets on cars, perished in the House.

The bill designed to limit the hours of labor of employees of street and interurban railways in Illinois was before the House on June 19. An amendment to the bill was adopted providing that no employee of such a railway should work more than ten out of fourteen consecutive hours. The original provision of the bill was that the employee should not work more than ten out of twelve hours. Another amendment to the bill was offered, designed to exempt interurban lines from the operation of the proposed law, and this was also adopted.

The Senate has passed the bill which provides that children between six and twelve years of age who get on railroad trains without tickets shall be charged not more than 1½ cents a mile.

### NEW YORK

At the regular session of the Legislature Governor Sulzer signed a bill providing for the improvement of the Brooklyn water front by New York City, including the Bush Terminal property, but vetoed a companion bill permitting railroad corporations to be joint owners of a terminal railroad corporation which was to operate a terminal railroad to be used by all railroad corporations not only on the Brooklyn water front but on the North River. At the instance of the New York City authorities Governor Sulzer sent a message to the Legislature on June 25 recommending the passage of a law which would permit railroad corporations to own stock in a terminal railroad on the Brooklyn water front.

### PENNSYLVANIA

On June 25 within forty-eight hours of final adjournment of the General Assembly nearly all the important administration measures were in danger of failure of passage, owing to the action of the Senate in amending the bills as they came from the House. When the public utilities bill emerged from the Senate committee it was loaded with many amendments and it was predicted that even if the bill thus amended passed the Senate the joint conference committee of both houses would be unable to reach an agreement on the points at issue, thus bringing about the defeat of the bill. Dean Lewis emphasized that it was vital to the bill that the commission receive power to approve or disapprove contracts made between municipalities and public service corporations. He stated that under existing conditions many corporations could make contracts with municipalities which would debar the commission from effective control of such corporations, because a contract

once made cannot be abrogated. The Senate committee struck out the clause giving the commission supervision over such contracts. The committee inserted an amendment providing that the amount in market value of a company's bonds and stocks should be an element in determining the value of the property of the company. The clause which provides that the "certificate of valuation" to be issued by the commission shall not be used to affect the manner in which the commission shall subsequently determine the valuation of the property was partly eliminated. Other most striking amendments made to the bill by the Senate committee related to grade crossings and their abolition, the wiping out of treble damages for rebating, the interchange of facilities between similar corporations, etc.

The McNichol bill to permit self-propelled omnibuses to be operated in connection with railways with the consent of local authorities, a measure believed to have been introduced in behalf of the Philadelphia Rapid Transit Company, was not reported from committee, and Senator McNichol stated to the correspondent of the *ELECTRIC RAILWAY JOURNAL* that the measure was dead for this session at least.

The House bill to require electric railways to establish waiting stations and to equip interurban cars with toilets was defeated in the Senate.

The bill to prohibit operation of electric railway cars having outside running boards was defeated in the House. This bill also provides that all electric railway cars operated between Nov. 1 and April 1 must have inclosed platforms. The final vote was sixty-eight to forty-eight, less than a majority of the body voting for the bill.

The bill to require fenders on all electric railway cars has been passed in the House.

After meeting with defeat the Martin bill appropriating \$100,000 for a bridge over the Susquehanna River at Middletown, Dauphin County, provided the county pays half the cost, was reconsidered and placed on the postponed calendar. It will hardly get through to final passage. In the event of the construction of this bridge it would have been used by the electric railway between Middletown and York County, connecting with the Harrisburg and York electric railway systems.

Two bills, completing the all-Philadelphia program for improved transit facilities, which had previously passed the Senate, have been passed by the House and go to the Governor, by whom they will probably be approved. The first of these measures restricts the use of money to be realized from the sale of bonds under the revenue producing measure of the all-Philadelphia group to the building of subways, wharves, docks and other permanent improvements. This bill was at first inserted in the revenue-producing measure, but was taken out because of the fear that it would render that bill unconstitutional as containing two distinct objects. The revenue-producing measure is the one which makes the personal property tax a county instead of state tax, and thereby raises the borrowing capacity of Philadelphia by about \$45,000,000. The bill limits the expenditure of this money to the specific objects set forth. The other bill provides that as soon as the people have approved the issuance of bonds for subway building, the city may proceed to make contracts without first waiting for the bonds to be sold.

On June 25 the Senate passed the amended public utilities bill. The measure then went to the joint conference committee. At 2 a. m. on June 26 the joint conference committee reached an agreement on the public utilities bill restoring the original clauses on supervision of contracts between municipalities and corporations, affecting certificates of valuation, giving the right to make schedules and leaving the division of cost of abolishing grade crossings in the hands of the commission. The clause in regard to the issuance of stock in excess of value as placed in the amended bill was not disturbed. The bill now goes to the Governor.

### WISCONSIN

Legislative action on matters concerning electric railways did not enter on the program of the Wisconsin Legislature for the week ended June 21. The Assembly and the Senate are starting on their final work, although adjournment has been fixed for July 15. The drastic measure to compel street railways to seat passengers or not collect fares was killed.

# Financial and Corporate

## Stock and Money Markets

June 25, 1913.

Trading on the New York Stock Exchange to-day reacted, but in only a few issues did the declines run to any length and these were offset largely by exceptional gains in other parts of the list. Stocks were in light demand in the last hour and when efforts were made to realize profits by early buyers substantial concessions were recorded. Rates in the money market to-day were: Call, 1 $\frac{3}{4}$ @2 $\frac{1}{2}$  per cent; sixty days, 4@4 $\frac{1}{4}$  per cent; ninety days, 4 $\frac{1}{4}$ @4 $\frac{1}{2}$  per cent; four months, 4 $\frac{1}{2}$ @4 $\frac{3}{4}$  per cent; five months, 4 $\frac{3}{4}$ @5 per cent; six months, 5@5 $\frac{1}{2}$  per cent.

In the Philadelphia market prices showed very little change at the opening. A strong undertone was maintained during the last hour, but the market was very narrow.

The market for stocks in Chicago to-day was strong, with Chicago Railways issues the leaders.

The Boston market to-day was generally quiet and irregular. The general list was without special feature with the general tone rather easy.

Dullness ruled on the stock exchange in Baltimore to-day. The demand for bonds was good.

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

	June 18	June 25
American Brake Shoe & Foundry (common).....	91	87 $\frac{1}{2}$
American Brake Shoe & Foundry (preferred).....	128 $\frac{1}{2}$	126 $\frac{1}{2}$
American Cities Company (common).....	35	36 $\frac{3}{4}$
American Cities Company (preferred).....	72 $\frac{1}{4}$	69 $\frac{3}{4}$
American Light & Traction Company (common).....	365	*365
American Light & Traction Company (preferred).....	106	*106
American Railways Company.....	37 $\frac{3}{4}$	38
Aurora, Elgin & Chicago Railroad (common).....	38 $\frac{1}{2}$	42
Aurora, Elgin & Chicago Railroad (preferred).....	*82	*82
Boston Elevated Railway.....	87 $\frac{3}{4}$	86 $\frac{3}{4}$
Boston Suburban Electric Companies (common).....	7 $\frac{1}{2}$	7 $\frac{1}{2}$
Boston Suburban Electric Companies (preferred).....	*66	*66
Boston & Worcester Electric Companies (common).....	a8	a8
Boston & Worcester Electric Companies (preferred).....	40	42
Brooklyn Rapid Transit Company.....	87 $\frac{3}{4}$	87 $\frac{1}{4}$
Capital Traction Company, Washington.....	117 $\frac{1}{8}$	117
Chicago City Railway.....	*150	*150
Chicago Elevated Railways (common).....	*24 $\frac{1}{2}$	*24 $\frac{1}{2}$
Chicago Elevated Railways (preferred).....	*75	*75
Chicago Railways, ptcptg., ctf. 1.....	91 $\frac{1}{2}$	100
Chicago Railways, ptcptg., ctf. 2.....	18 $\frac{1}{2}$	22 $\frac{3}{4}$
Chicago Railways, ptcptg., ctf. 3.....	6 $\frac{1}{2}$	6 $\frac{3}{4}$
Chicago Railways, ptcptg., ctf. 4.....	2 $\frac{3}{4}$	2 $\frac{3}{4}$
Cincinnati Street Railway.....	110	106
Cleveland Railway.....	102 $\frac{1}{2}$	102 $\frac{3}{4}$
Cleveland, Southwestern & Columbus Ry. (common).....	6	6
Cleveland, Southwestern & Columbus Ry. (preferred).....	29	29
Columbus Railway & Light Company.....	18	18
Columbus Railway (common).....	69 $\frac{1}{2}$	69 $\frac{1}{2}$
Columbus Railway (preferred).....	88	88
Denver & Northwestern Railway.....	*107	*107
Detroit United Railway.....	70	70
General Electric Company.....	136	136 $\frac{1}{2}$
Georgia Railway & Electric Company (common).....	115	115 $\frac{3}{4}$
Georgia Railway & Electric Company (preferred).....	83 $\frac{1}{2}$	83 $\frac{3}{4}$
Interborough Metropolitan Company (common).....	16 $\frac{1}{4}$	15 $\frac{1}{4}$
Interborough Metropolitan Company (preferred).....	59 $\frac{5}{8}$	55 $\frac{3}{8}$
International Traction Company (common).....	30	30
International Traction Company (preferred).....	95	95
Kansas City Railway & Light Company (common).....	18	18
Kansas City Railway & Light Company (preferred).....	36	36
Lake Shore Electric Railway (common).....	6	6
Lake Shore Electric Railway (1st preferred).....	92	92
Lake Shore Electric Railway (2d preferred).....	25	25
Manhattan Railway.....	125	127
Massachusetts Electric Companies (common).....	12 $\frac{1}{2}$	12 $\frac{7}{8}$
Massachusetts Electric Companies (preferred).....	68	67
Milwaukee Electric Railway & Light Co. (preferred).....	100	100
Norfolk Railway & Light Company.....	25	25
North American Company.....	65	66
Northern Ohio Light & Traction Company (common).....	80	80
Northern Ohio Light & Traction Company (preferred).....	105	105
Philadelphia Company, Pittsburgh (common).....	40 $\frac{5}{8}$	40 $\frac{5}{8}$
Philadelphia Company, Pittsburgh (preferred).....	39	39
Philadelphia Rapid Transit Company.....	21	22 $\frac{1}{2}$
Portland Railway, Light & Power Company.....	62	62
Public Service Corporation.....	111	111
Third Avenue Railway, New York.....	33	31 $\frac{1}{2}$
Toledo Railways & Light Company.....	2	2
Twin City Rapid Transit Co., Minneapolis (common).....	103 $\frac{1}{2}$	102 $\frac{3}{4}$
Union Traction Company of Indiana (common).....	4 $\frac{1}{2}$	4 $\frac{1}{2}$
Union Traction Company of Indiana (1st preferred).....	80	80
Union Traction Company of Indiana (2d preferred).....	30	30
United Rys. & Electric Company (Baltimore).....	26	25 $\frac{7}{8}$
United Rys. Inv. Company (common).....	19	20 $\frac{1}{2}$
United Rys. Inv. Company (preferred).....	35 $\frac{1}{2}$	34
Virginia Railway & Power Company (common).....	52	56
Virginia Railway & Power Company (preferred).....	87 $\frac{1}{2}$	87 $\frac{1}{2}$
Washington Ry. & Electric Company (common).....	85 $\frac{5}{8}$	90 $\frac{1}{4}$
Washington Ry. & Electric Company (preferred).....	87 $\frac{1}{2}$	88 $\frac{3}{8}$
West End Street Railway, Boston (common).....	71	71
West End Street Railway, Boston (preferred).....	88	87 $\frac{1}{2}$
Westinghouse Elec. & Mfg. Company.....	60	59 $\frac{1}{2}$
Westinghouse Elec. & Mfg. Company (1st preferred).....	106	106

\*Last sale. a Asked.

## ANNUAL REPORT

### American Water Works & Guarantee Company

The balance sheet of the American Water Works & Guarantee Company, Pittsburgh, Pa., which controls the West Penn Traction Company, Pittsburgh, Pa., on May 1, 1913, was as follows:

ASSETS	
Stocks of subsidiary companies (par value, \$46,481,050.00), book value.....	\$10,433,363
Stocks for sale.....	35,511
Bonds for sale.....	934,140
City warrants.....	38,626
Notes and accounts receivable.....	10,736,751
Other assets.....	3,500
Cash in banks and on hand.....	1,850,914
	\$24,032,805
LIABILITIES	
Capital stock:	
Common—authorized and issued.....	\$10,000,000
6 per cent. cumulative participating preferred—	
authorized and issued.....	10,000,000
Accounts payable, including accounts payable of all subsidiary water companies.....	67,872
Operating and maintenance reserve.....	2,182,228
Surplus.....	1,782,705
	\$24,032,805

The earnings of the company for the fiscal year ended April 30, 1913, are shown by the following statement:

Gross earnings of water plants owned and controlled by the company and dividends received by the company from traction and light properties.....	\$3,977,551
Other income and profits, less operating expenses.....	912,172
	\$4,889,723
Operating expenses of subsidiary companies.....	\$1,505,084
Coupon interest on outstanding bonds of operating companies.....	1,680,139
	3,185,223
Net surplus earnings for year, applicable to dividends.....	\$1,704,500

James S. Kuhn, president, says in part:

"For the fiscal year ended April 30, 1913, the net earnings were \$1,704,500. This is an increase of \$613,439 over net earnings in the preceding fiscal year and compares with an estimate of \$1,500,000 made in May, 1912, when application to list the \$10,000,000 6 per cent cumulative participating preferred stock on the New York Stock Exchange was pending. As the company had the benefit of the proceeds of the preferred stock issue only for a portion of the year, financial results do not reflect the maximum probabilities therefrom. We feel justified in estimating that net earnings for the period ending April 30, 1914, will exceed \$2,000,000. For further purposes of comparison, net earnings, after all deductions, for the past five years are shown as follows: 1909, \$680,210; 1910, \$780,634; 1911, \$823,133; 1912, \$1,091,061; 1913, \$1,704,500.

"The company, which had its inception in 1882 as an individual partnership, was originally incorporated in 1886 as the American Water Works & Guarantee Company, Ltd., with a capital of \$500,000 and owning and operating six water-works and two glass plants. This limited partnership was reincorporated on Jan. 27, 1891, as the American Water Works & Guarantee Company of New Jersey, with the same officers and stockholders and with a capital of \$1,000,000. The company now owns, controls and operates constituent companies in seventeen states. Gross earnings of \$4,889,723 indicate the growth and development of the communities in which your company's subsidiaries operate.

"A consistent policy of providing for present requirements and future growth has been adhered to. A steady expansion in population and the character of the service rendered, as furnished by water-works, hydroelectric, electric railway and irrigation companies, and also by the mining of bituminous coal, practically assures a rising ratio of earnings from year to year."

The directors, recognizing that a large proportion of the stockholders had only a superficial knowledge of the varied interests of the American Water Works and Guarantee Company, presented in their report brief descriptions of their different properties, accompanied by excellent maps and illustrations. Aside from affording additional information about the various operations conducted by the company, the booklet deserves commendation from the purely artistic standpoint. It is divided into five sections: water-works, electric railway and power, irrigation, hydroelectric, and industrial, in the order named.

### Columbus Railway & Light Company Consolidation

A committee of ten, representing the Columbus Railway & Light Company and allied corporations, Columbus, Ohio, submitted the consolidation plans which had been approved by the Public Service Commission to the boards of directors of the various companies on June 19 and they were accepted. A statement was then sent to all the stockholders, with recommendations from the board of directors of each company that their stock be deposited by July 2, 1913, with local banks, for which negotiable receipts will be given, preparatory to consolidation.

The common stock of the new company, the Columbus Railway, Power & Light Company, will be placed on a 5 per cent basis according to a statement sent to stockholders. It is estimated that the surplus earnings, after payment of all charges and dividends on preferred stock, will amount to \$500,000 the first year.

For the purpose of fixing a basis for the adjustment of fractional shares in the exchange, the reorganization committee has appraised the new preferred stock, series A, at \$102 a share; new preferred, series B at \$90, and new common at \$75. Fractional shares will not be issued, but stockholders will be permitted to make their holdings into full shares on the basis mentioned or they may sell their fractional shares on the same basis. The details of the financing plan were published in the *ELECTRIC RAILWAY JOURNAL* of June 21, 1913, page 1121.

**Beaumont (Tex.) Traction Company.**—The City Council of Beaumont, under date of June 17, passed the amended franchise of the Beaumont Traction Company, and it is understood that Stone & Webster, Boston, Mass., will exercise their option on the property and merge the company with the Jefferson County Traction Company in accordance with the plan outlined briefly in the *ELECTRIC RAILWAY JOURNAL* of May 31, 1913, page 983.

**Birmingham Railway, Light & Power Company, Birmingham, Ala.**—A dividend of 3 per cent has been declared by the Birmingham Railway, Light & Power Company, payable on June 30 to holders of record of June 25, on the \$3,500,000 of common stock, along with the usual semi-annual distribution of 3 per cent on the \$3,500,000 of preferred stock. This compares with 4 per cent each on Dec. 30 and July 1, 1912, and Dec. 30, 1911; 3 per cent in July, 1911, and 2½ per cent in January, 1911, and July, 1910, and 2 per cent in January, 1910.

**Chicago City & Connecting Railways, Chicago, Ill.**—A semi-annual dividend of \$2.25 has been declared on the \$250,000 of preferred participation shares of the Chicago City & Connecting Railways, payable on July 1 to holders of record of June 16. No payment will be made on the \$150,000 of common participation shares, on which \$1 per share was paid regularly to July, 1912, but on which no distribution was made last January, owing to the fact that the payment in July, 1912, exhausted the surplus from which payments were made.

**Chicago (Ill.) Railways.**—A circular letter has been received by the holders of Chicago Railways participation certificates asking them for proxies to be voted at the annual meeting in October. The communication explains that if a shareholder has already sent a proxy to the so-called protective committee, he may now send one to the company and cancel the effect of the other, as the proxy of the latest date will hold good at the meeting.

**Cincinnati, Lawrenceburg & Aurora Electric Street Railroad, Cincinnati, Ohio.**—On application of its president, J. C. Hooven, the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad was placed in the hands of F. B. Shutts, as receiver, by Insolvency Judge Warner on June 23. This step was taken as a result of a meeting of the stockholders and directors on June 12 and the cause assigned is the heavy losses sustained during the flood in March. The branch between Valley Junction and Harrison was almost completely destroyed, while the destruction of the county bridge spanning the Big Miami at Cleves and the company bridge across the Whitewater River at Valley Junction has prevented the operation of a large part of the main line. Cars are being run only between Anderson's Ferry and Cleves. The company was organized in 1899 with \$750,000

of common stock and \$250,000 of 6 per cent preferred stock. All of the common stock has been issued, but \$191,000 of the preferred stock is still in the treasury. The company has outstanding \$750,000 of 5 per cent gold bonds. The petition states that the company had always paid the interest and dividends on its securities promptly prior to March 25, 1913. The semi-annual interest on the bonds will be due on July 1, and the company stated that it would not be able to meet its fixed charges because it has not been able to operate its road properly since the flood. Mr. Hooven stated that he owned 4000 shares of the common stock and that he was a creditor to the extent of \$125,000 which he advanced to meet expenses. The claims of houses which have furnished supplies and materials to the road during the past six months are mostly unpaid. The Union Savings Bank & Trust Company, trustee for the bonds, was made a party defendant in the suit. The company, through C. E. Hooven, vice-president, admitted the allegations made in the petition. Mr. Shutts, the receiver, resides in Florida. He was in Cincinnati when the petition was filed and qualified by giving bond in the sum of \$25,000.

**Cincinnati, Georgetown & Portsmouth Railroad, Cincinnati, Ohio.**—It is reported that the Pittsburgh-Cincinnati Traction Company is negotiating through A. O. Kirshner for the purchase of the Cincinnati, Georgetown & Portsmouth Railroad. The new company has acquired leases on the right-of-way along the Ohio River through Clermont County and has secured the rights-of-way at other points along the river.

**Cities Service Company, New York, N. Y.**—Henry E. Doherty & Company, New York, N. Y., are offering for sale at par and accrued interest 7 per cent five-year coupon convertible gold notes of the Cities Service Company, dated May 15, 1913, in denominations of \$100, \$500 and \$1,000. Of the \$5,000,000 to be issued at this time from the \$1,000,000 authorized, \$3,000,000 has been sold in London, and a large portion of the remainder already taken by the company's American stockholders. These notes are subject to call at 102 and interest on thirty days' notice and are convertible at any time prior to redemption or maturity into Cities Service Company preferred stock at par.

**Cleveland & Eastern Traction Company, Cleveland, Ohio.**—On June 17 the Public Service Commission of Ohio refused to grant its consent to the Cleveland & Eastern Traction Company for the issuance of first mortgage 5 per cent bonds of the principal sum of \$54,000, preferred capital stock of the par value of \$32,400 and common capital stock of the par value of \$27,000, mention of which application was made in the *ELECTRIC RAILWAY JOURNAL* of May 10, 1913, page 868. The new issues were to have been devoted to reimbursing the income account of the Cleveland & Eastern Traction Company for moneys expended for the construction and installation of substation apparatus and high-tension transmission lines to replace obsolete generating apparatus formerly in use by the company.

**Duluth-Superior Traction Company, Duluth, Minn.**—A quarterly dividend of 1 per cent has been declared on the \$3,500,000 of common stock, along with the usual quarterly disbursement of 1 per cent on the \$1,500,000 of 4 per cent cumulative preferred stock, both payable on July 1 to holders of record of June 21. This is a reduction from the 1¼ per cent dividend declared quarterly from October, 1910, to April, 1913, inclusive. C. G. Goodrich, president of the company, states that the dividend has been reduced "to fortify the company's cash position, which suffered from last year's strike of two months' duration."

**Interborough-Metropolitan Company, New York, N. Y.**—The \$2,039,520 of 6 per cent collateral trust notes of the Interborough-Metropolitan Company which mature on July 1, 1913, have been extended to Jan. 1, 1914, with the privilege of retiring the issue at any time between July 1 and Jan. 1, 1914. The company has sufficient funds in its treasury at the present time to pay off these bonds if it so desires on July 1 next, but it has been decided to utilize the treasury bonds for other purposes.

**Lehigh Valley Transit Company, Allentown, Pa.**—The acquisition of the Easton Consolidated Electric Company by the Lehigh Valley Transit Company, which was ratified at the stockholders' meeting of the latter company held on

June 19 at Allentown, increases the Lehigh Valley Transit system to 209.8 miles of track.

**Los Angeles & San Diego Beach Railway, San Diego, Cal.**—The Railroad Commission of California has authorized the Los Angeles & San Diego Beach Railway to issue \$28,000 of notes.

**Middle West Utilities Company, Chicago, Ill.**—The Middle West Utilities Company reports earnings of \$911,969 for the last eleven and a half months. Out of this income the company paid total charges of \$212,948, leaving a net of \$699,021 for the year. Dividends to the extent of \$353,417 on the preferred stock left a balance of \$345,603 for the \$7,356,200 of common stock, or 4.6 per cent on the outstanding issue.

**New Orleans Railway & Light Company, New Orleans, La.**—A dividend of 1 per cent has been declared by the New Orleans Railway & Light Company on its \$20,000,000 common stock, payable June 30 to holders of record June 20, comparing with one-half of 1 per cent paid Dec. 31, 1912, and an initial payment of 1 per cent on July 1, 1912.

**New York Municipal Railway Corporation, Brooklyn, N. Y.**—The Public Service Commission for the First District of New York held a hearing on June 26 on the application of the New York Municipal Railway Corporation for permission to issue \$400,000 of its capital stock. The company last January applied for permission to issue \$1,000,000 in capital stock, and the commission at that time authorized an issue of \$100,000. The company now asks for leave to issue \$400,000 of the remaining \$900,000 of such stock, to provide working capital for the performance of its obligations under the dual system contract. This company was organized for the construction and operation of rapid transit lines allotted to the Brooklyn Rapid Transit under the dual system.

**Northern Massachusetts Street Railway, Athol, Mass.**—The Railroad Commission of Massachusetts on June 20 approved the petition of the Northern Massachusetts Street Railway for authority to issue bonds to the amount of \$500,000 maturing in thirty years and bearing interest at the rate of 5 per cent. Of this amount \$245,000 is for refunding purposes and \$255,000 to pay a floating debt.

**Oakland, Antioch & Eastern Railway, Oakland, Cal.**—The Oakland, Antioch & Eastern Railway has applied to the Railroad Commission for authority to issue \$1,000,000 of 5 per cent bonds. The proceeds are to be used to complete the road from Bay Point to Sacramento.

**Ocean Shore Railroad, San Francisco, Cal.**—The Ocean Shore Railroad has applied to the Railroad Commission for authority to execute its promissory notes in the sum of \$22,986 to make rental payments upon locomotives which it uses, and to execute notes in the sum of \$29,615 as part payment upon forty freight cars.

**Ohio Electric Railway, Cincinnati, Ohio.**—The Ohio Electric Railway has given a second and general mortgage to the Fidelity Trust Company, Philadelphia, as trustee to secure an issue of \$5,000,000 of bonds. The bonds are all dated June 2, 1913, and to bear interest at 5 per cent. The proceeds of the bonds will be used to repair flood damage, to retire other bonds and to pay for general improvements.

**Omaha Traction & Power Company, Omaha, Neb.**—W. B. McKinley, president of the Illinois Traction System, Peoria, Ill., has purchased at receiver's sale the property of the Omaha Traction & Power Company, which operates an electric railway from South Omaha to Papillion, a distance of 9 miles. The price paid was \$110,000.

**Public Service Company of Oklahoma, Tulsa, Okla.**—The Public Service Company of Oklahoma has been incorporated in that State with a capital stock of \$3,000,000 to take over a number of public utility properties. The company is being promoted in behalf of the Insull interests and will take over, it is said, the Tulsa Corporation, which is now included among the properties of the Middle West Utilities Company, and other public service plants in Oklahoma. The officers of the new concern are: Fred W. Insull, president; Martin J. Insull, vice-president; Burton French, secretary, and B. F. Frank, treasurer. The directors are Samuel Insull and Martin J. Insull, Chicago; Fred W. Insull, Oklahoma City; Paul M. Galloway, Tulsa, and Galen Crow, Guthrie, Okla.

**Republic Railway & Light Company, New York, N. Y.**—White, Weld & Company, New York, N. Y., are offering privately, at a price to yield 6 per cent, \$600,000 of secured 5 per cent gold notes of the Republic Railway & Light Company, dated April 1, 1912, and due Jan. 1, 1916, but redeemable, all or in part, on thirty days' notice at 100 and interest. Of an authorized issue of \$5,000,000 there is \$2,600,000 outstanding. These notes are secured by: (1) unencumbered first lien on the property of the Pennsylvania Power Company at Elwood City, Pa. (acquired at a cost of \$320,000), through deposit of all the first mortgage bonds and all the stock of that company; (2) unencumbered first lien on all the property now owned or to be acquired by the Republic Construction Company (estimated cost, \$1,250,000), through deposit of all the first mortgage bonds and all the stock of the company, and (3) deposit of over 98.55 per cent (\$10,592,500 par value) of the outstanding stock of the Mahoning & Shenango Railway & Light Company. The proceeds of the \$600,000 of notes now issued will be used to reimburse the company for advances made to subsidiary companies on account of betterments and improvements already made or to be made, and to retire floating debts incurred directly by subsidiary companies on account of such betterments.

**San Antonio (Tex.) Traction Company.**—The San Antonio Traction Company has secured an amendment to its charter which provides for an increase in the capital stock of the company from \$1,120,000 to \$1,400,000.

**Toledo & Indiana Railway, Toledo, Ohio.**—D. H. Schenck, treasurer of the Toledo & Indiana Railroad, has been elected president of the company to succeed his father, the late S. C. Schenck. Louis R. Schenck, New York, has been elected a director of the company.

**West Penn Traction & Water Power Company, Wheeling, W. Va.**—The West Penn Traction & Water Power Company, Pittsburgh, Pa., a subsidiary of the American Water Works & Guarantee Company, has called a special meeting of its stockholders at Wheeling, W. Va., June 30, to adopt a new agreement of incorporation.

**Wilmington & Philadelphia Traction Company, Wilmington, Del.**—The Wilmington & Philadelphia Traction Company, as lessee, announces that the \$64,000 of Delaware County & Philadelphia Electric Railway first mortgage 6 per cent bonds of 1893 and the \$175,000 of Chester, Darby & Philadelphia Railway first mortgage 5 per cent bonds of 1893 will be paid on and after July 1 upon presentation, the former at the office of Newburger, Henderson & Loeb, Philadelphia, and the latter at the office of the Delaware County Trust, Safe Deposit & Title Insurance Company, Chester, Pa. The holders have the privilege of exchanging the same not later than June 25 for new first mortgage 5 per cent bonds of the respective companies dated July 1, 1913, issued for like aggregate amounts, to refund the above loans, interest free of tax in Pennsylvania, secured on the same properties, respectively, with the same guaranties under lease, for principal and interest, and to mature in thirty years, with option on the part of the obligor to redeem at 103 and interest after 1914. Holders exercising this privilege will be entitled to receive the sum of \$10 per \$1,000 bond on depositing their holdings with H. B. Hollins & Company, New York, or Newburger, Henderson & Loeb, Philadelphia.

#### Dividends Declared

Augusta-Aiken Railway & Electric Company, Augusta, Ga., quarterly, 1½ per cent, preferred.

Aurora, Elgin & Chicago Railroad, Wheaton, Ill., quarterly, 1½ per cent, preferred; quarterly, three-quarters of 1 per cent, common.

Birmingham Railway, Light & Power Company, Birmingham, Ala., 3 per cent, preferred; 3 per cent, common.

Chicago City & Connecting Railways, Chicago, Ill., \$2.25 preferred.

Cincinnati & Hamilton Traction Company, Cincinnati, Ohio, quarterly, 1¼ per cent, preferred; quarterly, 1 per cent, common.

Cleveland (Ohio) Railway, quarterly, 1½ per cent.

Columbia Railway, Gas & Electric Company, Columbia, S. C., quarterly, 1½ per cent, preferred.

# Traffic and Transportation

## Accidents on Interstate Railways

The Interstate Commerce Commission, Washington, D. C., has issued a summary for the three months ended Sept. 30, 1912, of the casualties to persons on railways under its jurisdiction.

The total number of casualties of all classes reported to the commission amounted to 3109 for persons killed and 51,331 for persons injured. This statement includes 288 passengers killed and 4598 passengers injured and 2707 employees killed and 17,849 employees injured. The casualties were sustained by employees at work, by passengers getting on or off cars, by persons at highway crossings, by persons doing business at stations, etc., as well as by trespassers and others. In addition 114 persons were killed and 28,884 persons injured in "industrial accidents," which term covers accidents not involved in train operation but occurring to railway employees, other than trainmen, on railway premises. The report for interstate electric railways in particular shows that the list of those killed during the three months was 107, or 3.4 per cent of the total, and the list of injured 1362, or 2.6 per cent.

From the statement of the commission, which is appended, the columns have been eliminated which show casualties to employees not on duty and to trespassers. None of the former class was killed and only two were injured, while of trespassers thirty-nine were killed and thirty-three injured. The summary as given by the commission with the above eliminations follows:

Causes.	Number of Accidents.		Persons Killed.		Persons Injured.		Persons Killed.		Persons Injured.	
	Number of Accidents.	Passengers Killed.	Passengers Injured.	Employees on Duty Killed.	Employees on Duty Injured.	Other Persons Not Trespassing Killed.	Other Persons Not Trespassing Injured.	Total Persons Killed.	Total Persons Injured.	
Collisions	52	1	207	2	22	..	1	5	230	
Derailments	25	3	85	..	..	..	..	3	105	
Accidents to trains, cars or engines, except collisions, derailments and boiler explosions	..	..	..	..	..	..	..	..	..	
Bursting of, or defects in, locomotive boilers or boiler attachments	..	..	..	..	..	..	..	..	..	
Total train accidents	77	4	292	4	42	..	1	8	335	
Accidents to roadway or bridges not causing derailment, such as fires, floods, landslides, explosions, etc.	1	..	..	..	..	..	..	..	..	
Coupling or uncoupling cars (does not include accidents with air or steam hose)	..	..	..	..	1	..	..	..	1	
While doing other work about trains (not in shops or engine houses) or while attending switches	..	..	..	2	43	..	..	2	43	
Coming in contact while riding on cars with overhead bridges, tunnels, or any signal apparatus or fixed structure above or at side of track	..	2	4	2	11	..	..	4	15	
Falling from cars or engines	..	2	23	1	26	..	2	3	53	
Getting on or off cars or engines	..	1	356	..	20	2	8	3	392	
Other accidents on or around trains not here named	..	..	72	2	7	..	1	2	83	
Being struck or run over by engines or cars at stations or yards	..	..	..	..	..	..	4	6	11	
Being struck or run over by engines or cars at highway grade crossings	..	..	..	..	..	21	157	23	157	
Being struck or run over by engines or cars at other places	..	1	1	1	3	11	60	42	77	
Other causes	..	..	22	1	1	1	9	3	34	
Total, other than train accidents	..	6	478	9	114	39	243	93	870	
Grand total, exclusive of industrial accidents	..	10	770	13	156	39	244	101	1,205	
Industrial accidents to employees	..	..	..	6	157	..	..	6	157	
Grand total	..	10	770	19	313	39	244	107	1,362	

## ELECTRIC RAILWAY MONTHLY EARNINGS

AMERICAN RAILWAYS, PHILADELPHIA, PA.						
Period		Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1 mo.	May '13	\$433,589	..	..	..	..
1 "	" '12	309,642	..	..	..	..
11 "	" '13	4,672,222	..	..	..	..
11 "	" '12	4,441,890	..	..	..	..
ATLANTIC SHORE RAILWAY, SANFORD, MAINE						
1 mo.	May '13	\$28,927	\$23,655	\$5,272	\$615	\$4,657
1 "	" '12	25,207	22,286	2,921	581	2,340
BATON ROUGE (LA.) ELECTRIC COMPANY						
1 mo.	April '13	\$12,240	*\$7,416	\$4,824	\$2,083	\$2,741
1 "	" '12	11,129	*7,071	4,058	1,730	2,328
12 "	" '13	152,007	*92,477	59,530	21,817	37,714
12 "	" '12	128,469	*78,366	50,104	20,745	29,359
BROCKTON & PLYMOUTH STREET RAILWAY, PLYMOUTH, MASS.						
1 mo.	April '13	\$8,354	*\$7,413	\$941	\$1,131	\$190
1 "	" '12	8,286	*6,517	1,768	1,050	718
12 "	" '13	121,248	*93,334	27,914	12,755	15,159
12 "	" '12	119,575	*90,229	29,346	12,693	16,653
CAPE BRETON ELECTRIC COMPANY, SYDNEY, N. S.						
1 mo.	April '13	\$27,917	*\$15,858	\$12,059	\$6,082	\$5,703
1 "	" '12	26,559	*16,064	10,495	5,703	4,792
12 "	" '13	371,180	*196,699	174,482	69,553	104,929
12 "	" '12	343,489	*189,471	154,018	67,823	86,195
COLUMBUS (GA.) ELECTRIC COMPANY						
1 mo.	April '13	\$54,348	*\$26,678	\$27,670	\$20,314	\$7,536
1 "	" '12	49,354	*24,691	24,662	19,062	5,601
12 "	" '13	638,473	*287,867	350,606	232,413	118,192
12 "	" '12	578,906	*256,407	322,599	210,822	111,778
DALLAS (TEX.) ELECTRIC CORPORATION						
1 mo.	April '13	\$166,008	*\$99,185	\$66,823	\$24,635	\$42,188
1 "	" '12	141,098	*92,417	48,681	24,672	24,009
12 "	" '13	1,947,360	*1,142,779	804,581	295,787	508,794
12 "	" '12	1,671,308	*1,114,172	557,136	253,286	303,850
EL PASO (TEX.) ELECTRIC COMPANY						
1 mo.	April '13	\$70,658	*\$40,093	\$30,565	\$4,176	\$26,389
1 "	" '12	58,110	*33,617	24,493	6,681	17,812
12 "	" '13	844,778	*455,217	389,560	56,245	333,315
12 "	" '12	716,788	*407,026	309,761	82,417	227,344
INTERBOROUGH RAPID TRANSIT COMPANY, NEW YORK, N. Y.						
1 mo.	May '13	\$2,914,334	\$1,161,673	\$1,752,266	\$1,105,357	\$647,304
1 "	" '12	2,796,990	1,113,737	1,683,253	1,088,284	594,969
11 "	" '13	30,335,801	12,172,940	18,162,861	12,086,248	6,076,612
11 "	" '12	29,097,199	11,980,563	17,116,636	11,885,524	5,231,112

\*Includes taxes.



The bulletin of the commission also contains the following statement of the collisions and derailments on the electric railways during July, August and September, 1912:

Classes	Number	Damage to Road and Equipment and Cost of Clearing Wrecks	Number of Persons	
			Killed	Injured
Collisions, rear.....	30	\$5,061	..	144
Collisions, butting.....	9	4,380	2	46
Collisions, train separating.....	..	..	..	..
Collisions, miscellaneous.....	13	33,638	1	40
<b>Total</b> .....	<b>52</b>	<b>43,079</b>	<b>3</b>	<b>230</b>
Derailments due to defects of roadway .....	8	225	..	18
Derailments due to defects of equipment .....	2	1,900	1	8
Derailments due to negligence of trainmen, signalmen, etc.....	6	4,650	2	45
Derailments due to unforeseen obstructions of track.....	3	3,021	..	4
Derailments due to malicious obstruction of track, etc.....	..	..	..	..
Derailments due to miscellaneous causes .....	6	1,134	2	30
<b>Total</b> .....	<b>25</b>	<b>10,930</b>	<b>5</b>	<b>105</b>
<b>Total collisions and derailments for same quarter of—</b>	<b>77</b>	<b>54,009</b>	<b>8</b>	<b>335</b>
1911 .....	62	21,905	3	450
1910 .....	78	36,355	46	458

**The Joliet Safety Campaign**

The Chicago & Joliet Electric Railway, Joliet, Ill., presented the principle of "safety first" with telling emphasis to the people of Joliet, at the efficiency show given by the business men of that city from June 10 to 14 at Adams Arcade. The company installed a moving picture machine in the big lecture room at the Arcade and twice a day gave a two-reel show with films that portrayed all of the common forms of street accidents against which the company has been campaigning in the newspapers. As the public had been put into a receptive mood by reading the series of "safety talks" that had been run twice a week in each of the local papers, the moving pictures made a distinct impression upon it. One of the reels which was shown had been taken only the week previous for the Chicago (Ill.) Railways and will be used by the latter in the "safety first" campaign which it is preparing to carry out in Chicago. Through the courtesy of the film company and the Chicago Railways, the Chicago & Joliet Electric Railway was enabled to secure the use of the film for the exhibit at the efficiency show. The work of developing and printing this film was finished on noon of the day that the efficiency show opened, and the pictures had to be rushed to Joliet without the titles of the scenes. A representative of the railway explained each of the pictures as it was presented. The reel shows twenty-seven different types of street accidents, from the person who falls while attempting to board or alight from a moving car to the one who walks from behind one car directly in front of another. Several wagons and other vehicles shattered to bits are also shown in this film as a lesson to drivers who are inclined to dispute the right of way with a street car or who while driving parallel with a car suddenly swerve across the tracks in front of it. Since the Chicago & Joliet Electric Railway started its "public safety" campaign last April there have been only a few minor accidents on its city lines. As reported before in the ELECTRIC RAILWAY JOURNAL, this company began its campaign by co-operating with the safety department of the Illinois Steel Works and having lectures illustrated by slides and moving pictures presented to all the school children of Joliet. It has supplemented these lectures by newspaper talks and moving-picture shows to adults.

**Hearing Concerning Transfers in Brooklyn**

On June 19 the Public Service Commission of the First District of New York held a hearing in regard to ordering the exchange of transfers between the Coney Island & Brooklyn Railroad and certain intersecting lines of the Brooklyn Rapid Transit System. According to instructions from the commission, only statements were taken from the interested parties present.

A. L. Perkins, appearing for the Central Board of Trade,

stated that transfers are desired between Franklin Avenue and Fulton Avenue, discrimination being claimed against his district on the ground that the Franklin Avenue line is the only one which does not transfer to Fulton Street.

Counsel for the Allied Boards of Trade of Brooklyn said that there was no opposition to the purchase of the stock of the Coney Island & Brooklyn Railroad by the Coney Island & Gravesend Railway, one of the Brooklyn Rapid Transit companies, provided the purchase was made contingent upon the enlargement of transfer privileges in Brooklyn. Evidence was offered to show that the Brooklyn Rapid Transit System disregards the arbitrary operating divisions into which the system has been split. It was cited in one instance that of 229 cars observed as being operated under the name of the Nassau Electric Railroad eighty-five were found on its own line, 157 on the Brooklyn Heights Railroad and twenty-two on the Brooklyn, Queens County & Suburban lines; of the 170 belonging to the Brooklyn City Railroad eighty-five were operated by the Nassau Electric Railroad, seventy-seven by the Brooklyn Heights Railroad and eight by the Brooklyn, Queens County & Suburban lines; and of the 475 cars owned by the Traction Development Company, a non-operating company, sixty-six were found on the lines of the Nassau Electric Railroad, 272 on the Brooklyn Heights Railroad and 137 on the Brooklyn, Queens County & Suburban Railroad.

Counsel Woody, for the Brooklyn Rapid Transit Company, objected to the above statements on the ground that the commission had exhaustive evidence in its own files regarding the effectiveness of the 1907 dissolution and that it would necessitate a needless waste of time to review the voluminous evidence that would be offered by the Allied Boards of Trade and the rebutting evidence of the transit company. Chairman McCall decided, however, that such evidence could be submitted, and the hearing was postponed until such a date as counsel for the commission and the other parties can agree upon for the presentation of proof. A motion just prior to adjournment to eliminate the New York Consolidated Company from the companies coming under the order was temporarily denied.

**Near-Side Stop in Kewanee.**—The Galesburg & Kewanee Electric Railway, Kewanee, Ill., has put into effect a "near-side" stop order in Kewanee.

**Near-Side Stops in Dubuque.**—The city traffic ordinance of Dubuque, Ia., has been amended so as to require street cars to stop on the "near side" of the street.

**Freight Rights Granted in Montreal.**—The Montreal (Que.) City Council has voted the Montreal Tramways permission, until further notice, to haul freight on its lines in the city.

**New Automobile Law in New York.**—The new automobile law which came into force on June 1, 1913, in New York City forbids motor cars to pass street cars that have stopped to take on or let off passengers until the cars have been started again.

**Fare Complaint in Kentucky.**—Citizens of Shelbyville, Ky., the terminus of the Louisville & Interurban Railroad, have complained to the State Railroad Commission that the rates charged by the company for passenger service favor Louisville as against Shelbyville.

**New Color Scheme for Lincoln Transfers.**—The Lincoln (Neb.) Traction Company has adopted a new color scheme for its transfers. On Sunday the color of the transfer slips will be cherry; on Monday, orange; on Tuesday, white; on Wednesday, pink; on Thursday, yellow; on Friday, magenta, and on Saturday, green.

**Fare and Service Order Sought in Toronto.**—The City Council has instructed the Board of Control to apply under the general railway act for an order to require a single fare on Yonge Street, on the Toronto & York Radial Railway, instead of two fares from the Canadian Pacific Railway track to Bedford Park, and for an order directing the company to improve its service.

**"The How and Why of Safe Railroading" Reprinted.**—The Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., has published in pamphlet form the address, "The How and Why of Safe Railroading," delivered to employees of that company on Jan. 13, 1913, by E. F.

Schneider, general manager of the Cleveland, Southwestern & Columbus Railway.

**Increase in Wages on New Jersey Road.**—The Morris County Traction Company, Morristown, N. J., has increased wages as follows: For first six months, 20 cents an hour; second six months, 21 cents; third six months, 22 cents; two years and over, 24 cents. The men have been receiving from 19 cents for the first six months to 22 cents for two years and over.

**Philadelphia Transit Commissioner Appoints Staff.**—Director Taylor of the Department of City Transit of Philadelphia, Pa., appointed the working staff of his office on June 26 and announced that the department would at once begin active work planning for the improved transportation system for the city. Every one of the twenty men who have been appointed is a resident of Philadelphia.

**Appeal from Commission's Order for Extra Train.**—A petition has been filed with the Public Service Commission of Ohio asking that the order by which the Cincinnati, Georgetown & Portsmouth Railroad was required to put on an extra train leaving Cincinnati at 8:25 p. m. and arriving at Batavia at 10 a. m. be rescinded. The train has now been in operation for some time and the company claims that the patronage is not sufficient to warrant its continuance.

**Northern Ohio Company Answers Complaint.**—In an answer filed with the Public Service Commission recently to the complaint made by City Solicitor John C. Davis, of Massillon, the Northern Ohio Traction & Light Company states that the operation of the local road in that town is not profitable. In a reply filed on June 20 Mr. Davis claims that if proper service is maintained the company will make money. He denies that the company has built 5 miles of new track during the last eight years.

**Report Requested on Traffic Matters in Toronto.**—The transportation committee of the City Council of Toronto, Ont., has been instructed to report what officers of the city are responsible for the traffic conditions in Ward No. 7, whether an application should be made to the Dominion Railway Board for an order for suburban railway service from Toronto, Parkdale, Toronto Junction, Lambton, Weston, Davenport, East Toronto and Little York, on the advisability of establishing a motor bus line for the Junction, North Toronto, Earls court, Avenue Road and Rosedale, and what additional civic lines ought to be built.

**Cincinnati Transfer Ordinance.**—The street railway committee of the City Council of Cincinnati, Ohio, has in its hands an ordinance to require the Cincinnati Traction Company to issue universal transfers. At the request of Walter A. Draper, secretary of the company, action on the ordinance will be postponed until the work of re-routing cars has been completed. The resolution to regulate the capacity of street cars has been laid on the table indefinitely. Councilman Joseph White is preparing a resolution intended to compel the company to extend one of its lines so as to furnish increased service to Winton Place. Action on the proposed twenty-five-year franchise to the South Covington & Cincinnati Railway has been postponed until information can be secured as to the expiration of franchises in the Kentucky towns which the road reaches.

**Transfer Compromise in St. Louis.**—It is stated that under the terms of a proposed compromise with the city the United Railways, St. Louis, Mo., will install a system of transfers under which it will be possible for passengers to travel from any point on the system to any other point for one fare. The passenger is to make known his destination when he pays his fare and the conductor to whom the passenger pays his fare is to fix the route through to the destination. H. S. Priest, counsel for the company, is reported to have said: "I do not believe the city wants this company to allow the public to have the whole say in the matter of getting from one point to another. There is some justice in the statement that the company at least should have the right to name the route to be taken, and any other system would work a hardship on the company that would be neither just nor reasonable. The company is willing to give the city everything that it asks for in the matter of transfers, but demands in return that it be protected against fraud in the use of transfers."

## Personal Mention

**Mr. George Westinghouse** was awarded the Grashoff gold medal of the Society of German Engineers at the annual meeting of the society at Leipzig on June 23.

**Mr. D. D. Schenck**, treasurer of the Toledo & Indiana Railroad, Toledo, Ohio, has been elected president of the company, to succeed his father, the late S. C. Schenck.

**Mr. E. W. Samuel**, president of the Shamokin & Mt. Carmel Transit Company, Mt. Carmel, Pa., has been elected president of the I. S. Van Loan Railway Equipment Company, New York, N. Y.

**Mr. George W. Ravert**, who has been general freight and express agent of the Lehigh Valley Transit Company, Allentown, Pa., has been appointed freight superintendent of the Philadelphia (Pa.) Rapid Transit Company.

**Mr. A. L. Linn, Jr.**, was elected on June 17 a director of the Republic Railway & Light Company, Youngstown, Ohio, which is controlled by the Williams syndicate, with which Mr. Linn became associated in March, 1913.

**Mr. David W. Henry** has been elected president of the Terre Haute Traction & Light Company, Terre Haute, Ind., the property of which is leased to the Terre Haute, Indianapolis & Eastern Traction Company. Mr. Henry succeeds the late William R. McKeen.

**Mr. E. C. Allen**, formerly assistant superintendent of the Detroit, Jackson & Chicago Railway, Detroit (Mich.) United Lines, has been appointed general manager of the Cedar Rapids & Marion City Railway, Cedar Rapids, Ia., to succeed Mr. H. V. Ferguson, resigned.

**Mr. J. T. Young**, president and general manager of the Muskegon Traction & Lighting Company, Muskegon, Mich., has been appointed manager of the Grand Rapids (Mich.) Gas Light Company, which is also one of the properties of the American Light & Traction Company.

**Mr. M. J. Kehoe** has been appointed electrical engineer of the Ohio Electric Railway in charge of power houses and substations, with offices at Springfield, Ohio. Mr. Kehoe was formerly connected with the Fort Wayne & Northern Indiana Traction Company in a similar capacity for thirteen years. Prior to that he was with the St. Paul (Minn.) Street Railway from the time work was begun electrifying the line until 1893.

**Mr. Frank B. Lasher**, who has been connected with the organization of Mr. Harrison Williams, New York, N. Y., has been appointed auditor of the Republic Railway & Light Company, Youngstown, Ohio, which is controlled by the Williams syndicate. A biography and a portrait of Mr. Lasher were published in the *ELECTRIC RAILWAY JOURNAL* of April 5, 1913, at the time of his appointment as auditor of the New York State Railways and the Mohawk Valley Company. Mr. Lasher subsequently became connected with the organization of Mr. Harrison Williams.

**Mr. D. C. MacKenzie**, who has been with the Buffalo, Lockport & Rochester Railway, Rochester, N. Y., since the beginning of operation, has resigned to become secretary and treasurer of a manufacturing company in Toronto, Ont. Mr. MacKenzie was assistant auditor of the Buffalo, Lockport & Rochester Railway under Mr. W. W. Foster, Syracuse, which position he held since the merger of the company into the Beebe syndicate. On June 18, 1913, the officers of that company and the employees of Mr. MacKenzie's department tendered a farewell reception to him and presented him with a traveling bag and accessories.

**Mr. George W. Anderson**, Boston, has been appointed to the Public Service Commission of Massachusetts by Governor Foss. Mr. Anderson has practised law in Boston since 1890. He is a Democrat and in 1912 was the party candidate for Attorney-General of Massachusetts. Mr. Anderson is a native of Ackworth, N. H., and was educated at Cushing Academy, Ashburnham, Mass.; Williams College and the Boston University Law School. He has often appeared before state commissions and has been of counsel for the city of Haverhill in the litigation against the Haverhill Gas Light Company interests growing out of the refusal of the company to alter its rates as ordered by the Massachusetts Gas & Electric Light Commission.

**Mr. William B. McKinley**, president of the Illinois Traction System, Peoria, Ill., had a "good-will" dinner tendered to him at the Illini Country Club at Springfield, Ill., recently by business and professional men of the latter city. Mr. George M. Mattis, vice-president and general manager of the Illinois Traction System, and Mr. C. F. Handshy, assistant general manager of the company, were among the other officers of the company who were present. Mr. McKinley has been elected president of the Oskaloosa Traction & Light Company and the Oskaloosa & Buxton Electric Railway, Oskaloosa, Ia., which were taken over on June 1, 1913, by him and his associates.

**Mr. George P. Lawrence**, North Adams, Congressman from the First Massachusetts District, has been appointed a member of the Public Service Commission of Massachusetts. Mr. Lawrence is a native of North Adams and is a life-long Republican, having served continuously in Congress since 1890 and having been elected in 1897 to fill the unexpired term of A. B. Wright, deceased. He was educated at Amherst College and Columbia Law School. He received an honorary A. M. at Williams College in 1899, and an LL.D. at Amherst in 1910. He was at one time judge of the district court of Northern Berkshire and was president of the Massachusetts Senate in 1896-7.

**Mr. Frank Hedley**, vice-president and general manager of the Interborough Rapid Transit Company, New York, N. Y., was elected president of the New York Electric Railway Association at the meeting of that association held at Brighton Beach on June 24 and 25. Mr. Hedley was born at Maidstone, Kent, England, in 1864. His father, James Hedley, was master mechanic of the Southeastern Railway, and his great-granduncle, William Hedley, designed and built the original locomotive traction engine, in 1813, from which Stephenson obtained his ideas for his first locomotive, built in 1825. Mr. Hedley received a common-school education and learned the trade of machinist at Maidstone. He



Frank Hedley

came to this country in 1882, and the first two years was a machinist in the Jersey City shops of the Erie Railroad, following which he was employed in the same capacity in the shops of the New York Central & Hudson River Railroad for a few months. He next became a machinist with the Manhattan Elevated Railway, New York, and in 1885 became assistant general foreman in the locomotive department. In 1889 he was appointed master mechanic of the Kings County Elevated Railroad, Brooklyn, resigning in 1893 to become general superintendent of motive power and rolling stock for the Lake Street Elevated Railroad, Chicago. A few months later he was appointed general superintendent of the Lake Street Elevated Railroad, which was the first elevated railway to adopt electricity as motive power. Less than two years after going to Chicago he was appointed consulting engineer by the late Charles T. Yerkes, in addition to the duties of the other offices, and retained this position throughout the construction of the Northwestern Elevated and Chicago Union Loop. He organized the operating forces of these three elevated systems, and had charge of their operation as general superintendent. In January, 1903, he was appointed general superintendent of the Interborough Rapid Transit Company, New York, and the following year became general manager. On July 1, 1908, he was elected vice-president and general manager, being responsible for the operation of all elevated and subway lines in the boroughs of Manhattan and Bronx, and partly in Brooklyn. He is also vice-president and general manager of the New York Railways, operating surface lines in New York; vice-president of the Subway Construction Company, and manager for the trustees of the New York & Long Island Railroad. Mr. Hedley is a member of the Engineers' Club and the Western

Railroad Club, and served as president of the New York Railroad Club in 1911.

**Mr. Elmer E. Strong**, whose appointment as superintendent of transportation of the New York State Railways, Rochester Lines, was noted in the *ELECTRIC RAILWAY JOURNAL*



E. E. Strong

of June 14, 1913, page 1092, was graduated from Syracuse University in 1908 and immediately entered railroad work with the Syracuse Rapid Transit Company. He was advanced by the company to the position of chief inspector and occupied this position when he was promoted to the Utica & Mohawk Valley Railway. In July, 1912, Mr. Strong was appointed superintendent of transportation of the Syracuse Rapid Transit Railway to succeed Mr. F. A. Scripture, resigned. He continued in the last-mentioned capacity until his recent appointment to the New York State Railways, Rochester Lines, to succeed Mr. W. C. Callaghan, resigned. The system at Syracuse with which Mr. Strong was connected comprised 90.5 miles of line, while the system at Rochester over which he now has jurisdiction comprises more than 220 miles of track.

**Mr. C. F. Handshy**, whose appointment as assistant general manager of the Illinois Traction System, Peoria, Ill., was referred to in the *ELECTRIC RAILWAY JOURNAL* of June 21, 1913, began his railroad career as a telegraph operator with the Wabash Railroad in 1884. In 1890 he was promoted to the position of train dispatcher and continued in that capacity until 1902, when he was promoted to be assistant chief dispatcher at Decatur, Ill. In 1904 he was appointed chief dispatcher and in 1905 he was made trainmaster. Mr. Handshy resigned from the Wabash Railroad in September, 1907, to become general superintendent of transportation of the interurban lines of the Illinois Traction System. He was appointed to the position of general superintendent of the interurban lines of the Illinois Traction System in January, 1910, and was promoted to be assistant general manager of the company on June 1, 1913.

#### OBITUARY

**Leon Fender**, secretary and treasurer of the Knoxville Railway & Light Company, Knoxville, Tenn., is dead. Mr. Fender was born in Strassburg, Alsace-Lorraine, now part of the German Empire, then a part of France. He came to this country with his parents when only three years of age, the family going to Cincinnati to reside. He entered street railway work in Cincinnati when only fifteen years old, and worked his way up through the accounting department. From Cincinnati he went to Baltimore in the early eighties, and when Hambleton & Company bought the street railway and light interests of Knoxville in April, 1898, he was appointed secretary and treasurer. Mr. Fender is survived by his widow and two sons.

**George B. Francis**, formerly chief engineer of the street railways now included in the system of the Rhode Island Company, at Providence, R. I., is dead. Mr. Francis was born in West Hartford, Conn., in 1857. He entered the engineering department of the city of Providence in 1874, and spent nearly eight years there on municipal work. Subsequently he served the West Shore Railroad in the operating department and was also connected with the Oregon Railway & Navigation Company, Northern Pacific Railroad, Northern Pacific Terminal Company and several other steam railroads. In 1896 he was appointed resident and acting chief engineer of the South Terminal station work in Boston. Upon completion of this work in January, 1900, he became chief engineer of the street railway system at Providence, R. I. In 1902 he became connected with Westinghouse, Church, Kerr & Company, New York, N. Y.

## Construction News

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

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

### RECENT INCORPORATIONS

\***Appalachian Electric Power & Trust Company, Wilkesboro, N. C.**—Chartered in North Carolina to build a 20-mile electric railway from Wilkesboro to Taylorville. Officers: T. B. Finley, Wilkesboro; president; J. C. Smoot, vice-president; C. H. Cowles, secretary, and R. W. Gwyn, treasurer.

\***Public Service Company of Oklahoma, Tulsa, Okla.**—Incorporated in Oklahoma to take over several public utilities properties. The company is being promoted in behalf of the Insull interests and will take over, it is said, the Tulsa Corporation, which is now included among the properties of the Middle West Utilities Company, and other public service plants in Oklahoma. Capital stock, \$3,000,000. Officers: Frederick W. Insull, president; Martin J. Insull, vice-president; Burton French, secretary, and B. F. Frank, treasurer.

### FRANCHISES

**Birmingham, Ala.**—The East Lake Land Company, Birmingham, has asked for a franchise to build an electric railway on First Avenue, where the Birmingham Railway, Light & Power Company's line now ends, to Roebuck Springs and the Golf & Country Club, and has asked the Birmingham Railway, Light & Power Company to operate the new line.

**Tucson, Ariz.**—The Tucson Rapid Transit Company will ask for a new twenty-five-year franchise in Tucson.

**Santa Barbara, Cal.**—The Santa Barbara & Suburban Railway has received a franchise to extend its lines to the State Normal School in Santa Barbara.

**Stanton, Cal.**—The Pacific Electric Railway has received a franchise from the Council in Stanton.

**Augusta, Ga.**—The Augusta-Aiken Railway & Electric Company has received a franchise from the Council in August to extend its line on Central Avenue to the site of the new St. Joseph's College.

**Peoria, Ill.**—The Illinois Traction System has asked the Council for a franchise over Hamilton Boulevard and Jefferson Street into its new terminal station in Peoria.

**Peoria, Ill.**—The Peoria, Canton & Galesburg Railroad has received a franchise from the Board of Supervisors in Peoria. This line will connect Peoria, Canton and Galesburg. Horace Clark, president. [E. R. J., June 7, '13.]

**Peoria, Ill.**—The Peoria Railway has asked the Council for a franchise to extend its lines in Peoria to the new interurban station to be erected at Hamilton and Jefferson Streets in Peoria.

**Springfield, Ill.**—The Springfield & Central Illinois Traction Company has asked the Council for a fifty-year franchise in Springfield. [E. R. J., June 14, '13.]

**Union, Ill.**—The Decatur, Sullivan & Mattoon Transit Company has received a fifty-year franchise through Union. The line will extend from Mattoon to Casey.

**Cedar Rapids, Ia.**—The Iowa Railway & Light Company, Cedar Rapids, has asked the Council for a franchise to extend its Central Park line out on Seventeenth Street in Cedar Rapids.

**Mount Vernon, Ia.**—The Iowa Railway & Light Company has received a franchise over Main Street in Mount Vernon.

**Newport, Ky.**—The city of Newport, Ky., has announced that it will create a new electric railway franchise in Newport. The line has already been surveyed. It is expected that the franchise will be purchased by the Cincinnati, Newport & Covington Light & Traction Company, which will also purchase a franchise covering its Monmouth Street line in Newport, the privilege being about to expire.

**Bangor, Maine.**—The Bangor Railway & Electric Company has asked for a franchise to double-track its tracks on Union Street between Main and Fourth Street in Bangor.

**Baltimore, Md.**—The United Railways & Electric Company has accepted the franchise authorizing the extension of its Monument Street line to Orangeville.

**Morrisburg, Ont.**—The Ottawa & St. Lawrence Electric Railway will ask for a franchise in Morrisburg. This line will connect Ottawa and Morrisburg. F. Iveson, Toronto, secretary. [E. R. J., June 21, '13.]

**Philadelphia, Pa.**—The Philadelphia Rapid Transit Company has received a franchise for the construction of a loop at Front Street and Market Street, Philadelphia.

**Newport, R. I.**—The Newport & Fall River Street Railroad has accepted the two franchises granted by the city to extend its line in Newport. The double-tracking of the Bath road has been begun. Work on the Morton Avenue and Carroll Avenue extension will be begun at once.

**Beaumont, Tex.**—Stone & Webster, representing the Jefferson County Traction Company, have asked the County Commissioners for a franchise to enter Beaumont over the Park Street line. This railway will connect Beaumont and Port Arthur. [E. R. J., April 5, '13.]

**Jefferson, Tex.**—The Texas-Louisiana Traction Company has received a franchise in Jefferson. It will connect Shreveport, La., and Jefferson and Longview, Tex. A. B. Blevins, Jefferson, Tex., president. [E. R. J., Jan 11, '13.]

**Tyler, Tex.**—Daniel Hewitt, president of the Corpus Christi Street & Interurban Railway, has received a fifty-year franchise in Tyler.

**Milwaukee, Wis.**—The Milwaukee Western Electric Railway has received a franchise from the Council in Milwaukee.

### TRACK AND ROADWAY

**Northern Electric Railway, Chico, Cal.**—Right-of-way is being obtained by this company for a branch between Meridian and Woodland to pass through the Fair ranch and along the west bank of the Sacramento River through Grimes and Sycamore, connecting with the Colusa branch at the Meridian bridge.

**Los Angeles (Cal.) Railway.**—This company has been asked by the Board of Public Utilities to double-track its West Jefferson Street line at the westerly end and also to extend the line to the westerly city limits of Los Angeles.

**Pacific Electric Railway, Los Angeles, Cal.**—This company has confirmed the report that an immediate extension is planned that will make San Diego the southern terminal and the northern at San Francisco.

**San Francisco, Napa & Calistoga Railway, Napa, Cal.**—This company plans to reconstruct its line through Georgia Street in Vallejo.

**San Francisco-Oakland Terminal Railways, Oakland, Cal.**—The company is asked to consider plans to build an extension in the Dimond section of Fruitvale.

**Big Four Electric Railway, Tulare, Cal.**—Contracts will be awarded at once by this company for rails and ties for its line between Porterville, Lindsay, Tulare and Visalia. Grading has been completed between Woodville and Tulare, 17 miles, and it will now be begun between Woodville and Poplar. John C. Hays is interested. [E. R. J., June 21, '13.]

**Florida Interurban Railway & Tunnel Company, Jacksonville, Fla.**—This company has been completely reorganized with new officers and financial backing. It has been decided to abandon the proposition to build a reinforced concrete tube under the St. John's River for the present, and a ferry service will be installed until conditions warrant the building of the tunnel. It is planned to begin work soon on this line to connect Jacksonville, Pablo Beach and St. Augustine. R. B. Harrison, 201 Realty Building, Jacksonville, president. [E. R. J., Jan. 25, '13.]

\***Carlyle, Ill.**—Plans have been made to build an electric railway to enter St. Louis over the new municipal bridge. The plans provide for a line from East St. Louis to Belleville, thence to New Baden, Trenton, Aviston, Breese, Beckemeyer, Carlyle and Hoffman, making Centralia the terminus. Application for a charter will soon be made. Among those interested are: L. C. Riemann, Trenton; J. O. Koch, Breese; John Engelke, New Baden; G. Brefeld,

Aviston; Frank C. Mahlandt, Beckemeyer; E. A. Kahlert, Carlyle, and Theodore Husman, Hoffman.

**Peoria, Canton & Galesburg Interurban Railway, Peoria, Ill.**—This company plans to begin work about July 15 on its 51.58-mile line to connect Galesburg and Peoria, with a branch to Canton. Power will be purchased. The contract has not yet been awarded. Capital stock authorized, \$2,000,000; issued, \$2,000,000. Bonds authorized, \$2,000,000; issued, \$1,000,000. Officers: Horace Clark, Peoria, president; C. B. Coffeen, vice-president; J. A. Fenelon, Peoria, secretary; J. A. Lyon, 528 National Life Building, Chicago, Ill., treasurer, and L. L. Summers & Company, First National Bank Building, Chicago, chief engineers. [E. R. J., June 7, '13.]

**Chicago, Peoria & Quincy Traction Company, Quincy, Ill.**—At a special meeting of the stockholders of this company, held June 20, 1913, at Quincy, Ill., the capital stock of the company was increased from \$200,000 to \$3,000,000 and provision also was made for an issue of \$3,000,000 of bonds. The proceeds of the bond issue will be used to construct and equip the proposed electric railway from Quincy to Peoria and a branch line from Siloan Springs to connect with the main line in Clayton, Adams County. J. L. Soebbing is president and E. A. Van Ness, secretary.

**Rock Island (Ill.) Southern Railway.**—This company and the Illinois Traction System have filed with the Illinois State Railroad & Warehouse Commission an agreement giving the Rock Island Southern Railway the right to cross the tracks of the People's Traction Company at Galesburg.

**Indianapolis Traction & Terminal Company, Indianapolis, Ind.**—This company's new extension of the College Avenue line from Thirtieth Street to the State Fair Grounds has been placed in operation.

**Hutchinson & Northern Railway, Hutchinson, Kan.**—The Public Utilities Commission has granted this company authority to begin work on its interurban line between Hutchinson, Kan., and Fairbury, Neb. The company plans to build 14 miles between Hutchinson and Burrton this summer. It has also received permission to issue \$25,000 in common stock and preferred stock. W. S. Thompson, Hutchinson, is interested. [E. R. J., April 6, '13.]

**Kentucky Southwestern Electric Railway, Light & Power Company, Paducah, Ky.**—At a meeting of the stockholders of this company it was voted to authorize an increase in the bond issue from \$1,500,000 to \$2,500,000. The bonds have been underwritten, it was stated, at 80 per cent, which will enable the company to pay the cost of the construction of the first division of the line, from Paducah to Murray, via Mayfield, which is \$1,300,000, and leave \$300,000 for working capital. F. Smith, general manager.

**Bangor Railway & Electric Company, Bangor, Maine.**—Among the extensions under consideration by this company is one to Northern Maine Junction, in Hermon, 5 miles west of Bangor; an extension of the present Hampden line from its terminus in Hampden to Winterport, 7 miles, and possibly to Frankfort, making the line 15 miles; an extension of the Brewer division to Orrington, and some new loops within the Bangor city limits.

**North Beach Railway, Baltimore, Md.**—This company has received permission from the Public Service Commission to exercise its franchises and build a 2½-mile electric railway through North Beach and into Anne Arundel County through the section known as Holland Point, the terminus to be at Herring Bay. Permission was also granted for the sale of \$10,000 in first mortgage 5 per cent twenty-year bonds at not less than \$9,000 as gross proceeds, and to sell \$35,000 stock at par. The company has asked permission to sell \$10,000 in bonds and \$50,000 in stock. John C. Shaw is interested. [E. R. J., April 19, '13.]

**Berkshire Street Railway, Pittsfield, Mass.**—New rails will be laid and many curves eliminated by this company on its line between North Adams and Williamstown during the summer.

**Laurel Electric Light & Power Company, Laurel, Miss.**—This company has completed its new line from Laurel to the Wausau mill. Grading has been completed and track-

laying will be begun at once on the extension from Laurel to Ellisville.

**Southern Railway & Light Company, Natchez, Miss.**—Plans are being considered by this company to rebuild part of its line with 60-ft., 60 lb. T-rails and patent joints.

**Metropolitan Street Railway, Kansas City, Mo.**—Plans are being made by this company to build a short line between the business section of Kansas City, Kan., and Argentine.

**Nebraska Transportation Company, Omaha, Neb.**—Right-of-way has been secured and construction has been begun on the electric railway between Omaha and Sioux City, via Thurston, West Point, Benson, Stanton, Norfolk, Pierce and Antelope. C. W. Baker, Omaha, president. [E. R. J., July 20, '12.]

**\*Fredonia, N. Y.**—J. H. Digby, Dunkirk, and associates are considering plans to build an electric railway from Fredonia to South Dayton along the old Erie right-of-way.

**Frontier Electric Railway, Niagara Falls, N. Y.**—Work will soon be begun by this company on its line to connect Niagara Falls, Buffalo, Tonawanda and North Tonawanda. James S. Simons, Niagara Falls, general manager. [E. R. J., April 26, '13.]

**New York State Railways, Rochester, N. Y.**—Work has been begun by this company on the improvements in South Salina Street in Rochester. The entire trackage is to be renewed and upon a concrete foundation new ties and rails will be laid and the pavement replaced.

**Blue Ridge & Interurban Railway, Hendersonville, N. C.**—This company, which proposes to build a line to connect Spartanburg, S. C., and Saluda and Hendersonville, N. C., with extensions to Rutherfordton and Asheville, will obtain power from a proposed power plant to be built on the Green River near Hendersonville. Among those interested are: John Law, Walter Montgomery, Horace Bomar, Alexander White, George Ladshaw and Joseph Lee, all of Spartanburg, and William A. Law, vice-president of the First National Bank of Philadelphia. George Ladshaw is the engineer in charge of the plans.

**Salisbury-Spencer Electric Company, Salisbury, N. C.**—It is reported that this company plans to build an extension into Belmont Park.

**Waynesville & Canton Electric Railway, Waynesville, N. C.**—Preliminary arrangements are being made by this company to build a 12-mile line from Hazlewood to Canton, via White Sulphur Springs and Lake Junaluska. It will require several trestles. Henry T. Sharp, Waynesville, is interested. [E. R. J., June 14, '13.]

**Columbus Railway & Light Company, Columbus, Ohio.**—This company has decided to lay grooved rails on Livingston Avenue, between Parsons Avenue and the driving park, in Columbus. The rails are being rolled by the Lorain Steel Company.

**Middletown, Reading & Cincinnati Interurban Railway, Middletown, Ohio.**—At a meeting of the board of directors of this company at West Chester on June 23 E. H. McKnight was chosen general manager of the company. [E. R. J., June 21, '13.]

**Toledo Railways & Light Company, Toledo, Ohio.**—This company announces that the Toledo, Ottawa Beach & Northern Railroad will be extended to Monroe, Mich., next year, where it will connect with the Detroit, Monroe & Toledo line, thus giving it a through route between Toledo and Detroit.

**Poland Street Railway, Youngstown, Ohio.**—This company has awarded the contracts for the construction of its line to Youngstown as follows: Kane & Smith Company, Youngstown, for grading; Hunter Construction Company, Youngstown, for strengthening bridges, and Henderson Lumber Company, Pittsburgh, for lumber, ties and poles. George E. Rose, promoter. [E. R. J., June 27, '13.]

**Ardmore Western Interurban Railway, Ardmore, Okla.**—The citizens of Marietta have offered this company a bonus and right-of-way if it will build a line from Ardmore to Marietta, a distance of 30 miles. This is part of a plan to build an electric railway to connect Ardmore, Springer, Glenn, Woodford, Milo, Oil City, Cornish, Orr and Brock. John Owens, president. [E. R. J., Oct. 26, '12.]

**Terminal Electric Railway, Marshfield, Ore.**—This company announces that the contract for extending the line from the cold storage plant to the city limits has been awarded to Hugh McLain, Marshfield, and that work will be begun at once. The company will extend the lines to Bunker Hill and the plant of the C. A. Smith Lumber Company and to the Fair Grounds in the future.

**Portland, Eugene & Eastern Electric Railway, Portland, Ore.**—This company will soon rebuild the College Crest loop of the local line in Eugene.

**Erie & Central Pennsylvania Railway, Titusville, Pa.**—Work has been begun by this company on its 36-mile line between Titusville and Cambridge Springs.

**Sherbrooke Railway & Power Company, Sherbrooke, Que.**—This company has requested the city to revise the contract made three years ago in regard to the route of the lines in Sherbrooke. Owing to the growth of the city the company states that to meet the requirements of the contract certain changes not previously contemplated will have to be made.

**Bryan & Central Texas Interurban Railroad, Bryan, Tex.**—Grading has been begun by this company on its 25-mile line from West Stone City down through the Brazos section. The line extends from Bryan to West Stone City and from there down the Brazos section. Grading has been completed from Bryan to the Brazos River at Stone City. The line will use the new railroad bridge of the Houston & Texas Central Railroad across the river.

**Dallas-Denton Interurban Railway, Dallas, Tex.**—Surveys are being made by this company from Carrollton along the west bank of Elm Fork southeast of Lewisville. This line will connect Dallas and Denton, via Carrollton, Lewisville, Grapevine and Irving. Alvin C. Owsley, Denton, is interested. [E. R. J., May 20, '11.]

**Blue Ridge Interurban Railway, Greenville, Tex.**—Plans are being made by this company to make surveys between Blue Ridge and Merit and from Blue Ridge to Bonham. A. R. Nicholson, Greenville, is interested.

**Guadalupe Traction Company, Seguin, Tex.**—Surveys are being made by this company on its line to connect Austin, Lockhart and San Antonio. A. B. Axtell, chief engineer. [E. R. J., June 14, '13.]

**\*Richmond, Va.**—A company is being formed to build an electric railway from Richmond to West Point, via Henrico, Hanover, King William, King and Queen Counties. The proposed company, it is understood, will be a bidder for the property of the Richmond & Henrico Railway.

**\*Winchester, Va.**—Plans are being considered to build an electric railway to connect Williamsport, Martinsburg, Winchester, Shepherdstown, Charlestown, Barryville and eastward to Bluemont, Va. Power is to be obtained from the plant of the Northern Virginia Power Company. Clarence W. Watson is interested.

**Northwestern Electric Company, Vancouver, Wash.**—This company plans the expenditure of a large sum in Portland upon the approval of the Mayor of the franchise granted the company by the Council.

#### SHOPS AND BUILDINGS

**British Columbia Electric Railway, Vancouver, B. C.**—In order to give temporary facilities until the Bay Street line is completed this company will soon build a new carhouse at the end of the Cloverdale line in Victoria.

**Oakland, Antioch & Eastern Railway, Oakland, Cal.**—Work will be begun at once by this company on its new passenger station at Third Street and I Street in Sacramento. The cost is estimated to be about \$8,000.

**Southern Pacific Company, San Francisco, Cal.**—Plans are being considered by this company to enlarge its depot and terminals at Third Street and Townsend Street in San Francisco.

**Peoria (Ill.) Railway.**—This company plans to build a new interurban passenger station on Hamilton Street and Jefferson Street in Peoria.

**Louisville (Ky.) Railway.**—This company is preparing to equip its new repair shops at Twenty-ninth Street and Broadway, Louisville, which will adjoin the carhouses of the company, now under construction, with machinery to en-

able it to build its own cars. This will be the policy of the company hereafter according to President T. J. Minery.

**Hattiesburg (Miss.) Traction Company.**—Work has been begun by this company on its new office building on West Pine Street in Hattiesburg.

**Greenville, Spartanburg & Anderson Railway, Greenville, S. C.**—This company has nearly completed its new carhouse, repair shops and other buildings on a tract of 25 acres at Greenville. The machine shop is 160 x 75 ft., of white pressed brick, with a steel roof. It contains a store-room 20 ft. x 120 ft., and there are two tracks for repairing cars. A considerable amount of machinery is to be installed for wood and metal working. The carhouse is 200 ft. x 65 ft. and is constructed of the same material as the machine shop. The freight yards cover 20 acres, and there will be 2 miles of storage tracks. An equal amount of trackage can be constructed if required. The entire cost of these improvements is estimated at about \$200,000.

**Southwestern Traction Company, Temple, Tex.**—This company has opened general offices in the Bentley-Smith Building on Main Street in Temple.

**Gray's Harbor Railway & Light Company, Aberdeen, Wash.**—This company will build a new carhouse at Electric Park. The building, which will be constructed of reinforced concrete, will contain all the equipment necessary for handling and repairing the rolling stock including a traveling crane. The structure will also include a club room for employees.

#### POWER HOUSES AND SUBSTATIONS

**Pacific Gas & Electric Company, Sacramento, Cal.**—This company will install three 1000-kw synchronous motor-generator sets consisting of 11,000-volt, three-phase, 60-cycle motor and 600-volt D.C. generator. The apparatus has been ordered from the Westinghouse Electric & Manufacturing Company.

**Berkshire Street Railway, Pittsfield, Mass.**—This company has placed an order with the General Electric Company for new substation equipment consisting of three 300-kw rotary converters, six 110-kva and one 330-kva transformer and switchboard.

**Southern Power Company, Charlotte, N. C.**—Announcement has been made by this company that in the near future it will begin the construction of a new substation near Saxon Mills, which will supply the power to operate the cars of the Greenville, Spartanburg & Anderson Railway between Spartanburg and Greenville. The company will install a 2000-hp station, containing three transformers and two motor-generators. Alternating current from the company's 100,000-volt transmission line will be transformed in the substation into direct current at a voltage of 750 volts.

**Blue Ridge & Interurban Railway, Hendersonville, N. C.**—Plans are being considered by this company to build a new power plant on the Green River near Hendersonville, George Ladshaw, chief engineer.

**Lehigh Valley Transit Company, Allentown, Pa.**—This company will install two 500-kw, 600-volt D.C., six-phase, 60-cycle, 900-r.p.m. self-starting rotary converters and six 185-kva, 13,200-volt, single-phase O.I.S.C. transformers. The order has been placed with the Westinghouse Electric & Manufacturing Company.

**Pittsburgh (Pa.) Railways.**—This company has placed an order with the Westinghouse Electric & Manufacturing Company for one 500-kw, 600-volt, D.C., six-phase, 60-cycle, self-starting rotary converter and one 500-kva, 22,000-volt, three-phase O.I.S.C. outdoor-type transformer complete with one two-panel switchboard for its plant in Pittsburgh, Pa.

**Southern Traction Company, Dallas, Tex.**—Work has been begun by this company for its new substation in Hillsboro.

**El Paso (Tex.) Electric Railway.**—This company will install two 400-kva, 6600-to-2300-volt, single-phase, 60-cycle O.I.S.C. transformers and one switchboard. The apparatus has been ordered from the Westinghouse Electric & Manufacturing Company and will be installed in the plant in El Paso.

# Manufactures and Supplies

## ROLLING STOCK

**Portland (Me.) Railway** is reported as expecting to purchase ten cars.

**Cincinnati (Ohio) Traction Company** is in the market for 100 cars.

**Springfield & Xenia Railway, Springfield, Ohio,** is building a number of cars in its own shops.

**San Francisco-Oakland Terminal Railways, Oakland, Cal.,** is in the market for sixty passenger cars.

**York (Pa.) Railways** has ordered three 34-ft. semi-convertible passenger smoking cars from The J. G. Brill Company.

**Cleveland (Ohio) Railway** is in the market for 100 trail cars, in addition to the fifty motor cars mentioned recently in the *ELECTRIC RAILWAY JOURNAL*.

**Belt Line Railway Corporation, New York, N. Y.,** has ordered thirty-nine 18-ft. storage battery car bodies, mounted on special storage battery trucks, from The J. G. Brill Company.

**United Railways & Electric Company, Baltimore, Md.,** has placed an order with The J. G. Brill Company for sixty 30-ft. 8-in. semi-convertible pay-as-you-enter car bodies, mounted on 27-GE-1 trucks.

**Louisville (Ky.) Railway** has begun the construction of ten cars of a new type at its shops at Eighteenth and Walnut Streets. The cars are standard as to length and width, with entrance and exits at the center. A space 6 ft. in length and running the width of the car takes the place of the platform. This space is sunk to the level of the lower step on the ordinary car, so that no outside steps are necessary.

**Michigan United Traction Company, Jackson, Mich.,** recently noted in the *ELECTRIC RAILWAY JOURNAL* as having ordered six closed cars from the St. Louis Car Company, St. Louis, Mo., has specified the following details for these cars:

Seating capacity . . . . .	56	Conduits and junction boxes . . . . .	St. L.
Bolster centers, length . . . . .	36 ft.	Curtain fixtures . . . . .	Forsyth
Length of body . . . . .	61 ft.	Curtain material . . . . .	pantasote
Length over vestibule . . . . .	59 ft.	Hand brakes . . . . .	Peacock
Width over sills . . . . .	8 ft. 2 in.	Heaters . . . . .	Smith
Width over all . . . . .	8 ft. 11 in.	Headlights . . . . .	GE
Height, rail to sills . . . . .	43 in.	Sanders . . . . .	Ohio Brass
Sill to trolley base . . . . .	9 ft. 4 1/2 in.	Sash fixtures . . . . .	Edwards
Body . . . . .	composite	Seats, style . . . . .	H. & K.
Headlining . . . . .	Agasote	Seating material . . . . .	green plush and black leather
Roof, type . . . . .	turtle-back	Varnish . . . . .	Murphy's
Underframe . . . . .	steel	Ventilators . . . . .	Globe
Bumpers . . . . .	Hedley	Trap doors . . . . .	Edwards
Car trimmings . . . . .	St. L.		
Couplers . . . . .	Tomlinson		

**Ohio Valley Electric Railway, Huntington, W. Va.,** which recently ordered eight closed pay-within cars from the St. Louis Car Company, has specified the following details for these cars:

Seating capacity . . . . .	48	Curtain fixtures,	Cur. Sup. Co.
Bolster centers, length,	18 ft. 6 in.	Curtain material . . . . .	pantasote
Length of body . . . . .	30 ft. 8 in.	Destination signs . . . . .	St. L.
Length over vestibule,	41 ft. 8 in.	Fenders or wheelguards,	H. B.
Width over sills . . . . .	8 ft. 4 1/2 in.	Gongs . . . . .	Dedenda
Width over all . . . . .	8 ft. 8 in.	Hand brakes . . . . .	St. L.
Height, rail to sills . . . . .	35 in.	Heaters . . . . .	Smith
Sill to top of roof,	11 ft. 5 1/2 in.	Headlights . . . . .	Hinds
Body . . . . .	composite posts, steel girder, balance wood	Paint . . . . .	St. L.
Interior trim . . . . .	mahogany	Registers . . . . .	New Haven
Headlining . . . . .	Agasote	Sash fixtures . . . . .	Edwards
Roof . . . . .	arch	Seats, style . . . . .	St. L.
Underframe . . . . .	steel	Seating material . . . . .	rattan
Bumpers . . . . .	Hedley	Step treads . . . . .	Universal
Car trimmings . . . . .	St. L.	Trolley catchers . . . . .	Keystone
Couplers . . . . .	St. L.	Varnish . . . . .	St. L.
		Ventilators . . . . .	St. L.

## TRADE NOTES

**Detroit Lubricator Company, Detroit, Mich.,** has appointed John V. Higginbotham assistant treasurer of the company.

**Siemund Wenzel Electric Company, New York, N. Y.,** has moved its offices from 29 Broadway to 30 Church Street.

**American Car & Foundry Company, St. Louis, Mo.,** expects to build a one-story power plant at its works in Chicago, Ill.

**The J. G. Brill Company, Philadelphia, Pa.,** has received an order from the Philadelphia (Pa.) Rapid Transit Company for two 39-E trucks.

**Orenstein-Arthur Koppel Company, Koppel, Pa.,** has given the agency for its Canadian business to the Canadian Fairbanks-Morse Company.

**General Electric Company, Schenectady, N. Y.,** has received an order from the Third Avenue Railroad, New York, N. Y., for thirty-nine additional storage battery car equipments.

**De Laval Steam Turbine Company, Trenton, N. J.,** has appointed H. L. Watson sales manager of the company. Mr. Watson was formerly sales engineer of the Allis-Chalmers Manufacturing Company.

**Perry Ventilator Corporation, New Bedford, Mass.,** has received an order for ventilators for the new cars of the Montreal Street Railway which are now being built by the Canadian Car & Foundry Company.

**Roller-Smith Company, New York, N. Y.,** reports considerable activity in bond testing, this being the best time of year for that work, causing an unusually large demand for its direct-reading bond-testing sets.

**Col. B. W. Dunn, New York, N. Y.,** chief inspector of the Bureau of Explosives and Combustibles of the American Railway Association, has been elected to membership in the council of Underwriters' Laboratories.

**Pyrene Manufacturing Company, New York, N. Y.,** has received recent orders for its fire extinguishers from the following companies: New York Central Railroad, Public Service Railway, Atlantic City & Shore Railroad, Au Sable Electric Company, Philadelphia Rapid Transit Company and New York Edison Company.

**American Engineering Company, Philadelphia, Pa.,** has recently received large orders for its Taylor stokers from the following companies: New York, New Haven & Hartford Railroad, Montreal Electric Light & Power Company, Bay State Street Railway, Elmira Water, Light & Railway, Philadelphia Electric Company, Detroit Edison Company, American Brass Company and the General Electric Company.

**American Car & Foundry Company, St. Louis, Mo.,** has issued its report for the fiscal year ended April 30, 1913. The gross earnings amounted to \$5,539,000, which was an increase of \$1,346,000 over 1912. Renewals were increased by \$857,000, so that the surplus for dividends showed a gain of \$499,000. After paying 7 per cent on the \$30,000,000 preferred stock and 2 per cent on the \$30,000,000 common stock, a surplus remained of \$628,000, compared with \$139,000 for 1912, \$1,534,000 for 1911 and \$1,389,000 for 1910.

**Electric Service Supplies Company, Philadelphia, Pa.,** reports a substantial increase in its export sales of Garton-Daniels lightning arresters, together with an increase of 50 per cent in the sale of this apparatus in the United States and Canada. The company has also found it necessary to install in its factory an additional large electrical spot-welder to care for its rapidly increasing business in Keystone steel gear cases. In the construction of these gear cases both riveting and spot-welding is employed, which assures a tight, rigid gear case.

**I. S. Van Loan Railway Equipment Company, New York, N. Y.,** has been recently incorporated for the manufacture of railway motor supplies and controllers, the supplying of complete equipments for generating stations and electric railways, either new or second hand, and the financing of railway and lighting properties, new or reorganized. The company's officers are E. W. Samuel (president of the Sha-

mokin & Mount Carmel Transit Company), president; I. S. Van Loan, of New York City, vice-president, and A. C. Case, of New York City, secretary-treasurer.

**General Electric Company, Schenectady, N. Y.**, held the annual outing of employees of its New York office at Midland Park, Grant City, S. I., on June 21, 1913. There were 165 present. All kinds of sports were indulged in, the most important event being the annual baseball game between the "Old Boys" under Capt. S. W. Trawick and the "Young Men" under Capt. M. F. Reardon. Captain Trawick's team won, thereby regaining possession of the trophy which was won last year by Captain Reardon's team. A feature of the game was the battery work of Messrs. Keyes and Scott.

**Union Switch & Signal Company, Swissvale, Pa.**, which recently received a contract from the Public Service Railway, Newark, N. J., for signaling its Trenton Railroad division, between Bayway (Elizabeth) and Borhamtown Junction, now has the installation nearly completed. This division, which has 9.2 miles of single track, contains seven blocks, using fourteen semaphore signals and fourteen light signals. This system is for high-speed service. The signaling system on this division is similar to the system on the Washington, Baltimore & Annapolis Electric Railway, which was installed last year.

**Barney & Smith Car Company, Dayton, Ohio**, went into the hands of receivers in the Common Pleas Court, Dayton, Ohio, on June 23, 1913. The chief petitioner was a Cincinnati concern which claims \$11,000 due on contracts. The plaintiffs alleged that because of heavy losses in the flood the defendant concern was not prepared to meet its debts at the present time. Judge Snediker appointed Charles L. Harrison receiver and H. M. Estabrook co-receiver. Mr. Estabrook is president of the car company. The receivership petition says the assets of the firm are in excess of the liabilities and "consist of \$7,000,000 of contracts, \$2,000,000 in raw material, seventy factory and office buildings, fifty-six acres of ground and much valuable machinery." W. T. Irwin, E. L. Heinsheimer and Joseph F. Graydon have agreed to act as a committee for the protection of the interests of the stockholders of the company.

**The Warner International and Overseas Engineering Company, Ltd., London, England**, reports a new development of the Warner non-parallel axle, in the particular form of suspension, which is somewhat remarkable from the fact that side frames are eliminated, thus giving a considerable reduction in weight, while in appearance the car resembles one of the ordinary double-truck type and provides a simple four-wheeled device which allows the Warner trucks to adjust themselves to every curvature and irregularity of the track and the car body to ride smoothly because the axles are free to move within limits relative to one another and are controlled or steered by the car body with absolute simplicity and certainty. The St. Louis Car Company, which is the American licensee for this company, has already supplied the Warner equipment to ten United States railway systems and has received many repeat orders from these companies.

**Allis-Chalmers Manufacturing Company, Milwaukee, Wis.**, has announced through the committee of which James N. Wallace is chairman that voting trust certificates representing the preferred and common stock of the company are now ready for delivery on presentation and surrender of the certificates of deposit at the office of the Central Trust Company. Holders of stamped certificates of deposit for first mortgage bonds of Allis-Chalmers upon which the amount of the coupon of Jan. 1, 1912, has been advanced will be required on presentation to pay interest on the amount so advanced at the rate of 5 per cent from the date of the advance as noted on the certificates to June 23, 1913. Holders of certificates of bonds should designate the names in which they desire the voting trust certificates issued. The distribution will be made as follows against certificates of deposit: Voting trust certificates representing \$1,000 par value of preferred stock and \$350 of common stock of the Allis-Chalmers Manufacturing Company will be given for each first mortgage bond of the Allis-Chalmers Company. Holders of unstamped certificates of deposit will further be entitled to receive \$25 in cash per bond for the

coupon of Jan. 1, 1912. Voting trust certificates in the amount of \$20 par value of preferred stock and \$90 par value of common stock of the new company will be given for each share of preferred stock of the old corporation on which the assessment has been paid in full. Certificates for \$10 of preferred stock and \$35 of common stock will be exchanged for each share of common stock of the old company on which the assessment has been paid. The committee will accept payment of overdue assessments on stock up to the close of business on July 7, 1913. In accordance with the terms of the reorganization agreement, any depositor who shall have failed to pay his assessments on or before that date shall cease to have any rights under it and any payments made on account of assessments will be forfeited.

#### ADVERTISING LITERATURE

**Nachod Signal Company, Philadelphia, Pa.**, has issued a catalog illustrating and describing its signals.

**H. M. Byllesby & Company, Chicago, Ill.**, has issued Department Bulletin No. 5, entitled "The Valuation Problem."

**C. F. Pease Company, Chicago, Ill.**, has issued a catalog entitled "Everything for Blue-Printing." The catalog embraces everything from the latest and most improved automatic machines down to the smallest item required.

**O. M. Edwards Company, Inc., Syracuse, N. Y.**, has issued Catalog H, fully describing its all-metal trap door and containing numerous illustrations showing the trap doors applied to all types of cars; also views showing locks, adjusting mechanism, etc.

**Pyrene Manufacturing Company, New York, N. Y.**, has issued the *Pyrene Bulletin* for June, 1913. Among the leading articles in this issue are the following: "Pyrene in the Power House" and "United Railways of St. Louis." The issue also contains a list of 100 electric railways and power plants under Pyrene protection.

**Clark Electric & Manufacturing Company, New York, N. Y.**, has recently issued Bulletins Nos. 18 and 19 and revised copies of Bulletins Nos. 8 and 12. Bulletin No. 12 shows a protective clamping set for use at power, telephone and telegraph crossings and also at railway right-of-way; Bulletin No. 18 shows a recent development in suspension clamps, and Bulletin No. 19 describes a copper protective sleeve or bushing used with different types of clamp.

**Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa.**, has issued Descriptive Leaflet No. 3679, covering electric vehicle battery-charging switchboards and motor-generator sets, which are described and illustrated in detail. The company has also issued Folder 4255, covering Westinghouse Type PG porcelain insulators. These are insulators with high mechanical strength, suitable for use on 1500-volt d. c. railway work and 2200-volt transmission lines.

**Railway Improvement Company, New York, N. Y.**, has issued a very attractive folder on its coasting time recorder entitled "Are Your Motormen Using Power on the Flat Rate?" which calls attention to how much power each man is using on each car and to whether or not each motorman operates efficiently. The folder also describes the company's five booklets, which are issued semi-monthly and contain valuable operating data in regard to its coasting time recorder on interurban, city, subway and elevated cars.

**Fairbanks, Morse & Company, Chicago, Ill.**, have issued a booklet entitled "Catechism on Alternating-Current Apparatus." It deals with the construction and application of generators, motors and auxiliary equipment, giving in a condensed question and answer form a great amount of practical information. From a short description of how alternating current is produced arguments are given not only on general points of construction and operating characteristics of a.c. equipment but also on various points under such heads as "Advantages of Alternating Current," "Advantages of Direct Current," "Choice of A.C. or D.C.," "Electrical Characteristics That Must Be Considered in Comparing Alternators," and "Advantages and Limitations of Synchronous Motors and Split-Phase Motors."

*Salor*