Electric Railway Journal

A CONSOLIDATION OF

Street Railway Journal and Electric Railway Review

VOL. XXXVII. NEW YORK, SATURDAY, APRIL 8, 1911 No. 14

PUBLISHED WEEKLY BY

McGraw Publishing Company

239 WEST THIRTY-NINTH STREET, NEW YORK

JAMES H. McGRAW, President.
HUGH M. WILSON, 1st Vice-President. A. E. CLIFFORD, 2d Vice-President.
CURTIS E. WHITTLESEY, Secretary and Treasurer.
TELEPHONE CALL: 4700 BRYANT. CABLE ADDRESS: STRYJOURN, NEW YORK.

HENRY W. BLAKE, Editor.
L. E. GOULD, Western Editor.
Associate Editors:
RODNEY HITT, FREDERIC NICHOLAS, WALTER JACKSON.
News Editors:
G. J. MacMURRAY, FRANK J. ARMEIT.

CHICAGO OFFICE.....1570 Old Colony Building
CLEVELAND OFFICE.....1021 Schofield Building
PHILADELPHIA OFFICE.....Real Estate Trust Building
EUROPEAN OFFICE....Hastings House, Norfolk St., Strand, London, Eng.

TERMS OF SUBSCRIPTION:

For 52 weekly issues, and daily convention issues published from time to time in New York City or elsewhere: United States, Cuba and Mexico, $3.00 per year; Canada, $4.50 per year; all other countries, $6.00 per year. Single copies, 10 cents. Foreign subscriptions may be sent to our European office.

Requests for changes of address should be made one week in advance, giving *old* as well as new address. Date on wrapper indicates the month at the end of which subscription expires.

NOTICE TO ADVERTISERS.

Changes of advertising copy should reach this office ten days in advance of date of issue. New advertisements will be accepted up to Tuesday noon of the week of issue.

Entered as second-class matter at the post office at New York, N. Y.

Of this issue of the ELECTRIC RAILWAY JOURNAL 8500 *copies are printed.*

NEW YORK, SATURDAY, APRIL 8, 1911.

CONTENTS.

The Place of Meeting of the 1911 Convention

During the next few weeks the city in which the 1911 convention of the American Electric Railway Association is to be held will have to be selected. The committee which has been investigating this matter has visited the five places which are now being most seriously considered, namely, Minneapolis, St. Louis, Chicago, Rochester and Atlantic City. Of these Atlantic City undoubtedly possesses the best combination of exhibit hall and hotel accommodations, and, in a sense, its selection would be the easiest choice for the executive committee to make. To go West would probably involve some sacrifice of hotel comforts or of exhibit features, or possibly of both, but we believe that this sacrifice would be worth while if it would enable the association to hold its convention next October in the Central States, a district which it has not visited since 1906, the year of the Columbus convention. In other words, we consider that the choice of Atlantic City would be unwise unless the committee should find upon further investigation that the facilities for holding the convention in a city in the Central West are totally inadequate. Three reasons stand out prominently in favor of a Western convention this year. The first is that the Eastern members of the association would benefit greatly by a trip to the West, where they would have an opportunity of inspecting the important electric railway work in that territory. The second is that those who have canvassed the situation most carefully are of the opinion that there would be a larger attendance of Western delegates and a larger attendance of railway men in the aggregate at such a convention than if the association should meet in Atlantic City. The third reason for a choice of a convention location away from the Atlantic seaboard this year is that it would emphasize the national character and scope of the American Electric Railway Association. The Western members of the association have gone East for the national convention during three years out of the last four. They have at home important railway systems of which they justly feel proud and the choice of a Western city this year would be a proper recognition of the services which these members have done in advancing the progress of the art.

Little Improvements That Save Money

On almost every electric railway there arise at one time or another some unusual complaints, or even damage suits, because of a trifling defect in the car equipment which could hardly have been foreseen by the most careful mechanical department. In one instance complaints were received from passengers whose clothing had been soiled by their leaning against freshly oiled air brake spindles. This odd trouble was eliminated by attaching a plate which is raised to cover the side cavity in

the top of the spindle whenever the brake valve is not in use at the conductor's end. On another line damage claims were made by patrons whose clothing had been torn by exposed screws or by nails which had worked up through the seats. These cases were remedied by using countersunk screws in every part of the inside woodwork accessible to passengers and by tucking the rattan seat coverings over the seat frames so that the nails could be inserted into the bottom members. A different field for minor improvements is in the protection of parts subject to greatest use. For instance, one company has found that wooden strips on the long edges of rattan cross seats will save wear and avoid unsightliness. A second company finds it worth while to guard the wooden risers of its platform steps by copper sheathing. Protective schemes of this kind are especially desirable on cars where the furnishings are of high quality.

Standard Signal Aspects

The joint committee on block signals of the Engineering and Transportation & Traffic Associations has begun work on the preparation of a comprehensive examination of many phases of the problem of signals for electric railways. The committee will not confine its report to any type of signal or principle of signaling. It now plans to discuss signals controlled by trolley contacts, track trips, short track-setting sections and continuous track circuits. In addition to this information a portion of the report will be devoted to dispatchers' signals. One striking fact brought out at the meeting of the signal committee at Chicago reported in our issue last week was the wide diversity in the means for displaying the indications. This diversity is far greater with the so-called "trolley signal" apparatus than it is with the signals commonly installed on steam roads. Nevertheless, a large diversity in the means of displaying indications has also been found on the steam railroads, and an association of steam railway signal engineers for several years has been at work attempting to standardize steam railway signaling practice, in so far as the signal aspects are concerned. It is stated that on some steam roads, during the run over one engine division, the locomotive driver has to read, understand and interpret correctly and quickly the meaning of more than 100 aspects, indicating how his train should be run. The variety of patterns carried in stock by the manufacturing companies which have been making signals for the steam railroads for many years is also an object lesson in favor of standardization. Through the whims and individual ideas of different railroad signal engineers, hundreds of pieces of apparatus differing only in small details have been designed to accomplish practically the same results. Of even greater importance than the saving in cost of manufacture due to the use of standard parts is the increased safety of operation under a system of signals in which only a few indications are used and each indication has but one meaning no matter where the signal is located. This comment in regard to uniformity in signal indications and aspects is intended as a note of warning to the electric railways which have purchased or are considering the purchase of block signals. It has been the aim of the Railway Signal Association to reduce all the necessary signal aspects to a uniform and simple series, and the American Electric Railway Association can do no better than to approve and thereby promote the general use of these standard aspects as a first step in advancing the art of signaling for electric railways.

TRANSFERS IN THE CENSUS REPORT

The statistics of transfer passengers given in the special census report on street and electric railways, 1907, show the steady march of increase in this traffic. An interesting table gives the percentages of the total traffic represented by fare, transfer and free passengers respectively, and a partial comparison with the corresponding results shown in the 1902 census. The comparison is not complete, however, because the number of free passengers in 1902 was not computed separately, and, if included in the returns for that year, was probably added to the transfer traffic.

While the fare passengers represented 78.1 per cent of the total traffic in 1907, they amounted to 81.8 per cent in 1902. The transfer traffic amounted to 20.9 per cent in 1907 and 18.2 per cent in the earlier period. The proportion of free traffic in 1907 is given as 1 per cent. While the development of interurban railways produced some part of the greater fare traffic of 1907, the proportion of the total contributed by these lines is not believed to have affected materially the statistics based on the results for the country as a whole.

If we take the complete figures of fare and transfer passengers carried in the United States during the fiscal year 1907, as reported by the Census Bureau, we find a basis for comparison that illuminates further the value of the returns in these respects. It is the practice of companies to show the percentage which the transfer traffic constitutes of the fare traffic, rather than the percentage of the total traffic, and we suggest amendment of future census reports so as to give the results in this way. The transfer traffic amounted in 1907 to 26.8 per cent of the total number of fare passengers. In this computation we disregard the total of free passengers reported in 1907. The inclusion of that total would add 1.3 per cent to the ratio. It is mentioned because of the possibility that the free traffic may be reported in the transfer traffic shown in the 1902 census. The report for 1902 showed that the transfer traffic reached the aggregate of 22.3 per cent of the fare traffic.

This increase in the period of five years is in complete accord with the tendencies reported by all of the companies which have not taken definite steps to restrict the use and abuse of their transfer privileges. While the number of fare passengers increased 55.9 per cent, the number of transfer passengers increased 87.8 per cent. If we include the total number of free passengers in the transfer traffic for 1907, because of the possibility that the 1902 figures may have included similar returns, it may be shown that the increase in transfer traffic reached the still larger figure of 96.9 per cent.

Such figures as these afford one of the most valuable indices that it is possible to secure of an unmistakable tendency of the industry. The electric railway companies and the public are equally concerned in the results set forth in the census report upon which these computations are based. It should be remembered, however, that these returns, which are the last records available for the country as a whole, are now three or more years remote from the present day. Notwithstanding the isolated efforts at various points in the country to restrict the great development in the use of transfers and the accompanying illegal increase in this traffic, there continues to be a rate of increase in most localities which is out of all proportion to the development of the fare traffic.

Unless radical corrective steps are put in force throughout

the country generally, the next census of electric railways will show a still greater and disproportionate development in transfer traffic, which, except in isolated instances, yields no direct revenue to the companies furnishing the service.

RECLAIMING AND REWORKING SCRAP

It is astonishing how large an amount of money can be saved if a company carefully watches its scrap pile. Nearly all roads, both steam and electric, practise the redemption of scrap materials in some way or other, but investigation shows a wide diversity in the methods followed. Hence it seems worth while to call attention to some definite means that have been found successful in utilizing old materials. This subject of saving valuable scrap may appear commonplace to some officers, but we have seen enough laxity on certain roads to warrant us in speaking plainly about the general need for more care of old material if all opportunities for economy are to be grasped.

The extent to which the mechanical departments of steam roads go in the reworking of old material was recently set forth in a paper and discussion on that subject before the Western Railway Club in Chicago. Generally speaking, every large steam road has a well-defined organization for collecting and working over old material so as to increase its life. Fortunately the electric roads have less old material with which to deal, but the scrap on electric roads has a considerably higher intrinsic value than that which accumulates on steam roads. Practically all electric roads, except the smallest, recast their scrap copper and brass, utilizing it again in the form of trolley wheels, car fittings and parts of electrical equipment. We have yet to call upon a road which makes a practice of reclaiming scrap materials and is not enthusiastic about the results obtained.

It is obvious that a few dollars spent in sorting and grading scrap material will repay manyfold in better prices when the scrap is sold. To afford facilities so that this sorting can be done continuously a proper arrangement of bins or scrap compartments in which the materials may be placed and kept under lock and key is quite necessary.

A brief statement of some of the means taken by steam roads to effect economies by reclaiming scrap are of interest. The Illinois Central Railroad, whose reclaiming department yields between $9,000 and $10,000 a month, has built a small re-rolling mill at a cost of about $4,000 and has equipped this mill for reclaiming and re-rolling scrap iron usually obtained in the form of truss rods, center pins, bridge members and arch bars. The re-rolled iron which is the product of this mill is superior to merchant bar because of the further refining done during re-rolling. This iron is used principally for making bolts and the net saving per ton is more than $12. In the scrap department of the Illinois Central Railroad a saving of $2,000 a month is obtained by relining journal bearings. Air hose that has been chafed or cut is made usable again by means of splicing with special nipples and clamps, thus bringing about a saving of 46 cents per hose on 150 sections of hose per month. A paint mill has been built because it has been found that by reworking the accumulation of paint skins and slops a paint well suited for freight cars and passenger-car roofs is obtained at a saving of $22 per barrel of paint paste. The skins are boiled in raw oil and shaded with red oxide of iron. Good economy results from straightening I-section brakebeams that have been bent in service. Formerly these were discarded because it was known that the reheating preparatory to straightening greatly reduced the strength of the material. Now such beams, after they have been straightened, are reinforced by attaching a 2-in. x 2¼-in. angle with six rivets, and are said fully to meet specifications for strength. A new brakebeam costs about $2.40, weighs about 167 lb. and has a scrap value of 75 cents. The cost of straightening and reinforcing is 45 cents for material and 19 cents for labor. In six months during the summer of 1910 10,233 beams were straightened and reinforced. The large steam roads find it economical also to make car cleaner, make and repair springs, re-tire steel wheels, make their own brass castings and, in general, reclaim all material that warrants the expense, taking into consideration the quality of the article after it has been turned into usable stock.

How far the electric roads can go in this work of reclamation depends largely on the size of the road, but no road is too small to neglect the opportunity for economy easily obtainable by watching its scrap pile. It would be desirable in any event to have all the scrap collected at frequent intervals and brought to a single storeroom where one competent shopman could select the material which was serviceable for re-use. This method is successfully followed in the Syracuse shops of the Syracuse Rapid Transit and Oneida Railways.

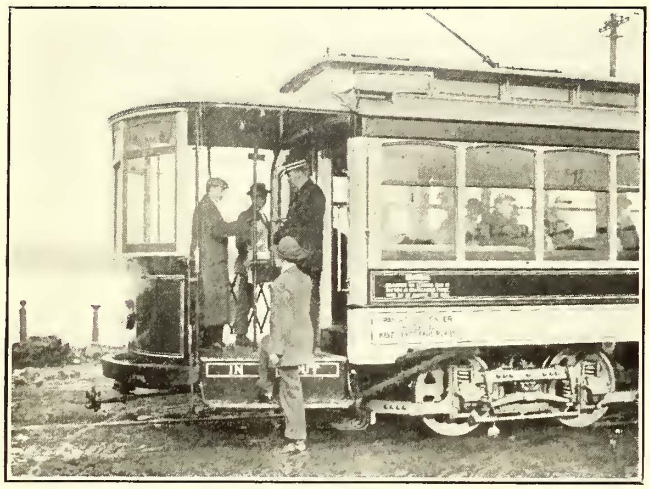
The electric railways on the Pacific Coast pay considerably more for metals than do the roads in the East and have for some time been giving attention to the utilization of scrap. The Pacific Electric Railway has been successful in making axles from selected wrought-iron scrap. When an old car is dismantled the scrap wrought iron and steel are carefully sorted into bins in the company's storehouse, their value being credited to the destroyed car. The storekeeper receives this material at scrap value and issues it to the blacksmith shop at an increase of 2 per cent for the cost of handling. Preparatory to making billets the scrap wrought iron is cut into pieces about 16 in. long and bound into packs weighing about 175 lb. After having been heated in an oil furnace these packs are worked under a power hammer until a billet has been formed. Seven such billets are required for making a 6-in. axle, and the metal, by the time it is shaped, has been so reworked that it has a very tough fiber and a high elastic limit. Similarly the scrap steel is reworked into shape suitable for filler blocks for use in building special track work.

The economy obtainable from the refiltering of oil is generally recognized. In fact, there are few progressive electric railways of importance without oil and waste saving apparatus, either of the convenient turbine type or of various forms of steam heated tanks with filtering and settling compartments for different classes of oil. One steam road, which reclaims journal-box waste and oil in large amounts, goes even farther. The vat in which the waste is cleaned collects a heavy mud which later is put in barrels. A series of screens in installed in these barrels so that the oil may be drained out of the mud. From the residue on the screens a substantial amount of babbitt is reclaimed.

The foregoing examples of how some companies have increased the economy of operation by reclaiming materials that otherwise would be sold for scrap form an object lesson in economy that is well worth recognition.

NEW PAY-AS-YOU-ENTER CARS FOR BALTIMORE

On Dec. 25, 1910, the United Railways & Electric Company of Baltimore placed in service upon its Gilmor Street line the first of a lot of 60 prepayment, semi-convertible cars received from The J. G. Brill Company to replace an assignment of open and closed cars. The general dimensions of the new car are as follows: Length of platform, 5 ft. 8½ in.; length over the corner posts, 30 ft. 8 in.; length over all, 43 ft. 9 in.; maximum width, 8 ft. 5 in. The exterior of the car is similar in design to many of the semi-convertible cars now in operation



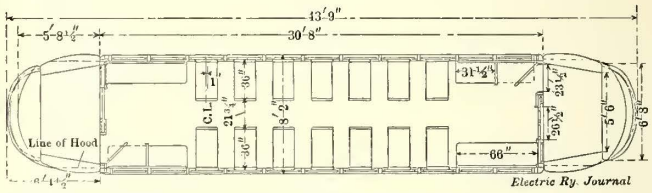
Baltimore Prepayment Car—Rear Platform

in Baltimore, but the new type represents a careful study of conditions to be met in the adaptation of pay-as-you-enter cars to service requirements. This study was made possible by the rebuilding in the shops of the railway company one year ago of 32 standard city semi-convertible cars for use as prepayment cars.

One detail which received most attention was the length of platform, which is 5 ft. 8½ in. It was found that this length was the maximum possible to operate successfully over any or all of the Baltimore lines. A careful consideration of the platform area and the proper arrangement of the devices located thereon has produced a platform space which meets successfully the most exacting conditions of the service. The platforms are not entirely inclosed, as vestibule doors are not used, but the openings where required are closed by standard lazy-tong gates. The entrance to the car proper is gained by a pair of sliding doors which give a 26½-in. opening. On the extreme left is a single door with 23½-in. opening which swings inward for emergency exit. The regular car-body exit is formed by the double sliding doors on the right at the front end. The exit and entrance doors are separated by a narrow bulkhead in front of which the conductor and his fare box are located.

The seating of the car is an arrangement of four longitudinal seats extending the length of the first two windows at each corner, the rest of the car being furnished with 14 transverse reversible spring rattan seats 36 in. wide. The aisle space between these transverse seats is 21¾ in. The longitudinal seats at the two diagonal corners where the swinging door is located have a portion of this seat arranged to fold downward to permit the opening inward of the swinging door. The total seating capacity of the car is 42 passengers, 28 on the transverse seats and 14 on the longitudinal seats. The transverse seats, which were made by the Hale & Kilburn Manufacturing Company, are fitted with pressed-steel pedestals, wall and aisle plates. This type represents a saving of approximately 25 lb. per seat over a seat of similar dimensions made up with malleable iron castings.

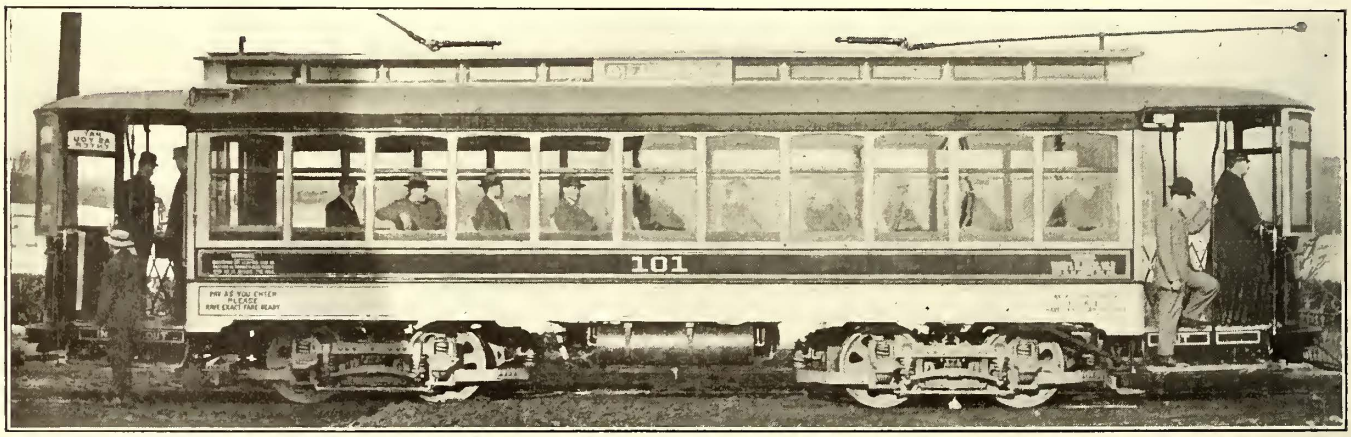
The ceilings, both side and center, are covered with agasote, which has been sanded smooth and, after being painted light buff color, has a neat ½-in. aluminum black-edged stripe. The cars are supplied with Hunter illuminated destination signs in the side of the monitor deck, as well as in the ends.



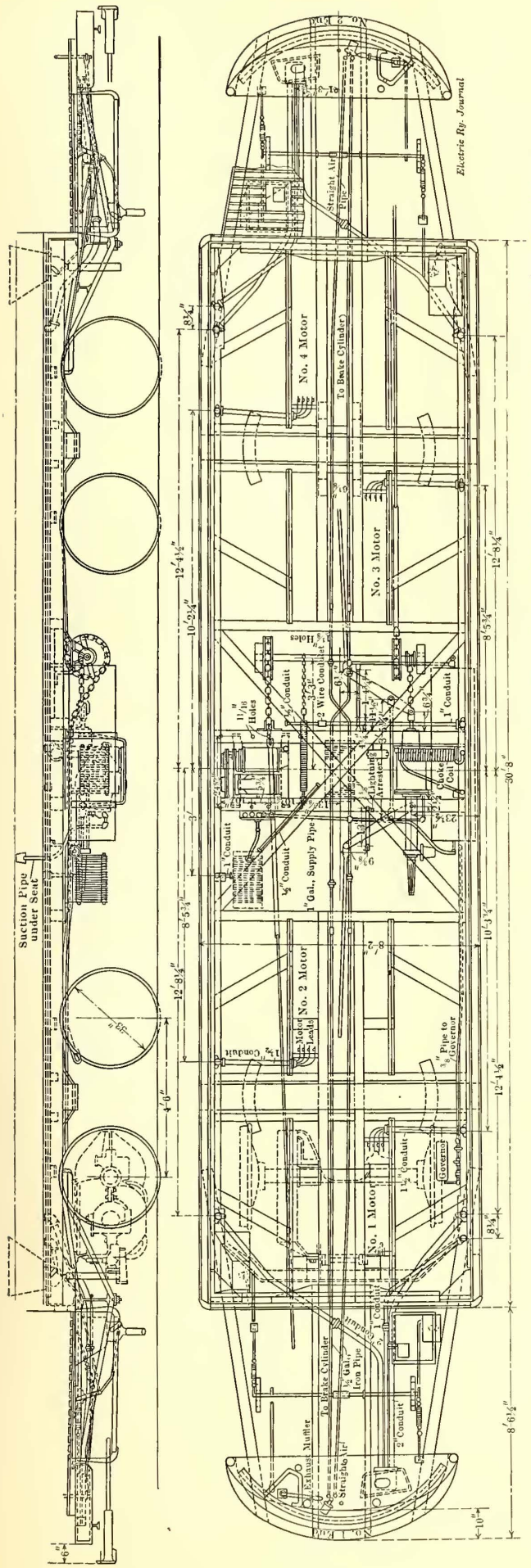
Baltimore Prepayment Car—Seating Plan and General Dimensions

The diagrams on page 628 show the car-wiring schemes for all equipments except the push-button circuit. Wires are run in conduit for the heaters, although at the present writing no heaters are installed. At each intermediate post there is supplied a pearl push button connecting with a monitor bell at each end for passengers to signal to the conductor. This circuit is operated by three dry cells. All the lights of the car are placed in grooved moldings. Each platform has two lights on the transverse center of the hood, arranged to burn simultaneously with the front headlight.

The interior finish of the car is natural cherry. The interior moldings are very plain so as to require the least work in keeping the car clean. The curtains are of pantasote, supplied with either the Curtain Supply Company's ring fixture No. 88 or the National Lock Washer Company's National cam fixture. Each car is supplied with one Brill fare box of a type designed especially for the United Railways & Electric Company. This box has no registering mechanism, as the registration of fares is accomplished with two International R-7 registers of the railway company's standard type. A register



Baltimore Prepayment Car—Side View of Car in Service



Baltimore Prepayment Car—Plan and Side View, Showing the Location of the Electrical and Braking Apparatus, Power Wiring Conduits, etc.

rod, which passes through the car, communicates by a small rod at either end with one of the registers; the standard practice of the railway company is to use the forward register. The fare box is carried upon a sliding railing, so that when the car is reversed the railing can be raised up out of the way and the fare box carried to the other platform. This railing serves at the same time to form a barrier for dividing the passengers who board and leave the car.

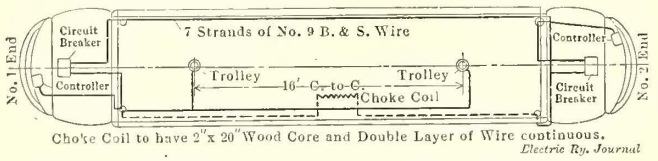
Careful study has been given to obtaining a car of minimum weight. To this end the platform supports, instead of being of wood reinforced with heavy angles, are made of light channel irons, so arranged that they will carry with a large factor of safety all the loads placed upon them. The wooden sills have been reduced in size from 4¼ in. x 8¾ in. to 2¾ in. x 6⅞ in. At the same time the sill plate has been increased from ⅜ in x 15 in. to 5/16 in. x 16½ in. The sill plate by means of a drop forged corner iron is held by rivets to the end sill, which is a 10-in. channel. The center knees are securely riveted to the end sill, by means of a ⅜-in. gusset plate, thus forming a very substantial and stiff underframe. The post construction also represents the latest design of the car builder. It is a skeleton post which, instead of having a solid upper part, is made in two pieces framed together to produce the required shape. At the same time unnecessary material in the center of the wide part of the post is omitted. A further saving in weight has been made by the omission of center stringers running the entire length of car. These stringers are usually covered with a heavy angle iron extending from the bolster out to the end of the platform in order to support the platforms. Instead of these timbers, short timbers are used to distribute the forces acting on the bolster. The floor boards are all hollow back, which also reduces the weight.

The car is equipped with four sand boxes of the "Dumpit" type, two of which are placed beneath platforms and two in the corner of the car under the longitudinal seat. Both sand boxes at each end are operated simultaneously by means of a hand lever connected to a rocker shaft. The hand brake rigging is a carefully designed scheme of chain sheaves which does away with an elaborate system of levers and produces excellent hand brake rigging with a slight saving in weight. The car body complete with foundation brake rigging, etc., weighs approximately 15,830 lb.

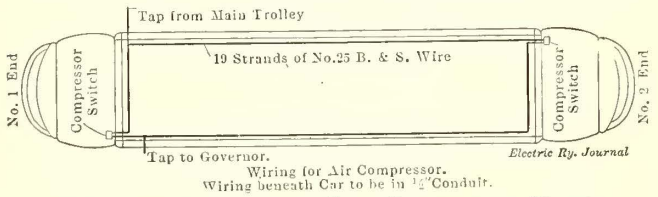
The cars are mounted on a pair of Brill 27 GE-1 trucks. A study of the possibilities of reduction of truck weight led to the adoption of a cast-steel truck bolster. Another material gain was obtained by using short pieces of heavy angle iron for truck motor supports. The journal boxes are of a type specially designed for the railway company, using its standard check plates and bearings. The back of the box is fitted with an M. C. B. wooden dust guard. The journal box lids are of the pressed-steel type, which, after careful test, have given most excellent results. The axles are Coffin-treated steel, 4½ in. in diameter, with 4⅞-in gear seats and 4-in. journals. Solid gears are used and are pressed on with from 45 tons minimum to 60 tons maximum pressure. The wheels are cast iron 33 in. in diameter and of a type that is standard on all the double-truck equipment. The brake shoes are arranged to be used with the separable shoe heads and have steel backs of the American Electric Railway Association's standard design. The truck brake rigging is the United Railway & Electric Company's standard slide brake. The approximate weight of the two trucks is 12,800 lb.

The selection of the motor equipment received exhaustive consideration before the specifications were prepared. It was found that the grades, running time, schedules to be met and the fact that the rail is very gummy during the greater portion of the year were conditions which produced high temperatures within the motors. Hence there was required for the motor a larger amount of reserve power than could be obtained with but two motors of the standard types. A very important part in the consideration as to whether four or two motors should be used was the fact that the reliability of service obtained from four motors was most marked as compared with that

from two motors. It was therefore thought best to sacrifice some gain in weight reduction in favor of a high standard of reliability. The electrical equipment consists of four Westinghouse 101-B-2 motors, operated by two K-28-B controllers. These motors have some special features required by the railway company's specifications, the most prominent of which are the field coil terminals, brush holder design and an improved method of lubrication for the axle bearings. The controllers also include some special features, namely, a special ground connection on the back of the controller case, a liberal shunt for motor cut-out switches and a wiring arrangement whereby the motor fields are always ahead of the motor armature in either forward or backward motion. The resistance as furnished consists of the railway company's standard patterns arranged in two boxes of 25 grids each. Fifteen-tooth special grade pinions are used in connection with 69-tooth solid gears. The gear cases are of sheet steel put together by the oxyacetylene process.

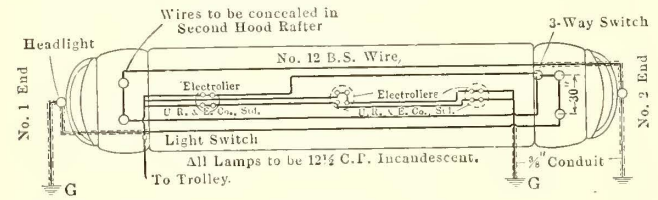


Baltimore Prepayment Car—Power and Lightning Arrester Circuit



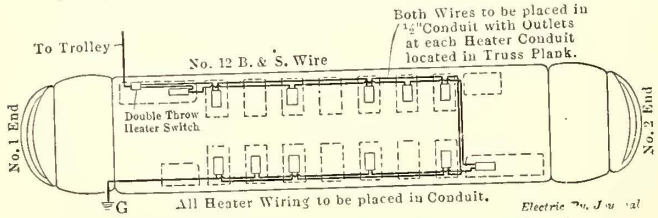
Baltimore Prepayment Car—Compressor Circuit

The cables within the car are placed in the transite-lined cable box running the length of the car. The leads of the cables running the controller, motor, resistance and ground are placed in conduit, extending below the floor or platform of the car. Special fittings were designed by the railway company to connect the conduit to the cable box.



Baltimore Prepayment Car—Headlights and Lighting Circuit

Two standard Westinghouse circuit breakers altered to meet the specifications of the railway are a part of this equipment. There are also one Westinghouse lightning arrester and one choke coil. The complete electrical equipment weighs approximately 12,800 lb., which includes the conduit and fittings.



Baltimore Prepayment Car—Heater Circuit

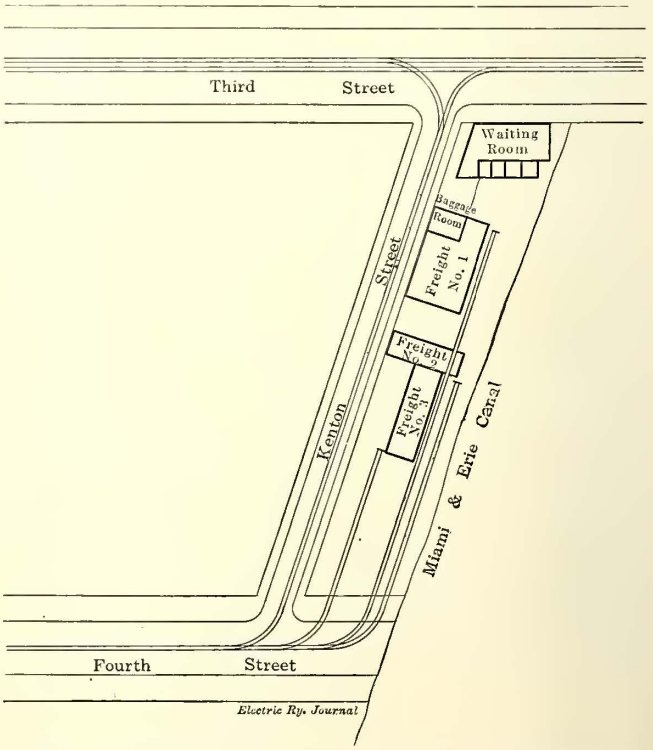
The air brakes are the Westinghouse Traction Brake Company's SM-3 equipment. In connection with this equipment a type F automatic slack adjuster is furnished. The use of slack adjusters has made it feasible to change from daily to weekly brake inspections. Both the "G" governor and "DIEG" compressor have a number of small details introduced in their construction, as required by the railway company's specifications. The motorman's valve is fitted with a special guard of home manufacture to prevent grease getting on clothing of passengers while standing on the rear platform. The brake cylinder is 10 in. in diameter. The total weight of the air brake equipment, including all of the pipes and fittings, is approximately 1650 lb.

The installation of the complete electrical and air-brake equipments was made at the shops of the United Railways & Electric Company. As promptly as the cars were received from the builder they were turned out completely equipped at the rate of three a day. The complete car weighs, without passenger load, 43,080 lb., as compared with 45,000 lb., the weight of the pay-as-you-enter cars remodeled by the Baltimore company. The new cars weigh 1026 lb. per seated passenger. Notwithstanding the additional weight of the slack adjuster and conduit fittings, there is a net saving of 1920 lb., as compared with the rebuilt cars. This saving is distributed as follows: 1120 lb. in the car body, 600 lb. in the trucks and 200 lb. in the electrical equipment.

The complete specifications, covering all details in connection with the car body, trucks, electrical and air brake equipments, were prepared under the direction of A. T. Clark, superintendent of rolling stock and shops, subject to the approval of William A. House, president.

TERMINAL IMPROVEMENT OF OHIO ELECTRIC RAILWAY AT DAYTON, OHIO

The Ohio Electric Railway has completed a new terminal station at Dayton, Ohio. The layout of the new terminal arrangement is shown in the accompanying illustration. The property on which the passenger station and freight house are now located is in Kenton Street, extending between Third and Fourth Streets. There were some old buildings on the property when it was purchased, and these have been converted into a passenger station. A warehouse that was on the property has been converted into a freight station, and additional platforms and sheds with tracks adjoining sufficient to accommodate the



Layout of Dayton Terminal of Ohio Electric Railway

freight and express business for several years have also been constructed.

In connection with the new terminal arrangements the Ohio Electric Railway has acquired from the People's Railway and the City Railway of Dayton an interest in certain tracks on Third Street and Jefferson Street, and has constructed new tracks forming a loop connecting the Kenton Street property with the different divisions of the system. Under the new arrangement the freight and passenger cars of the Cincinnati-Dayton division, Dayton-Union City division, Dayton-Richmond division and Dayton-Columbus division enter the new terminal on Kenton Street, effecting a saving in operating expenses and affording additional accommodation to the patrons of the various lines. Before the construction of the terminal and the connecting tracks there was no physical connection between the several divisions of the Ohio Electric Railway at Dayton. The new improvement eliminates the necessity, which passengers were under previously, of traveling several blocks to make the connecting car on which to continue their journey.

The foregoing information has been received through the courtesy of F. A. Healy, secretary and treasurer Ohio Electric Railway.

THE SEATING AND CURTAIN DEPARTMENTS OF THE BROOKLYN RAPID TRANSIT SYSTEM

The Brooklyn Rapid Transit System does all building and repairing of rattan seats and chairs at the East New York shops and all curtain and miscellaneous leather work at the Thirty-ninth Street shops in conformity with its policy to specialize the work of the mechanical department as much as practicable.

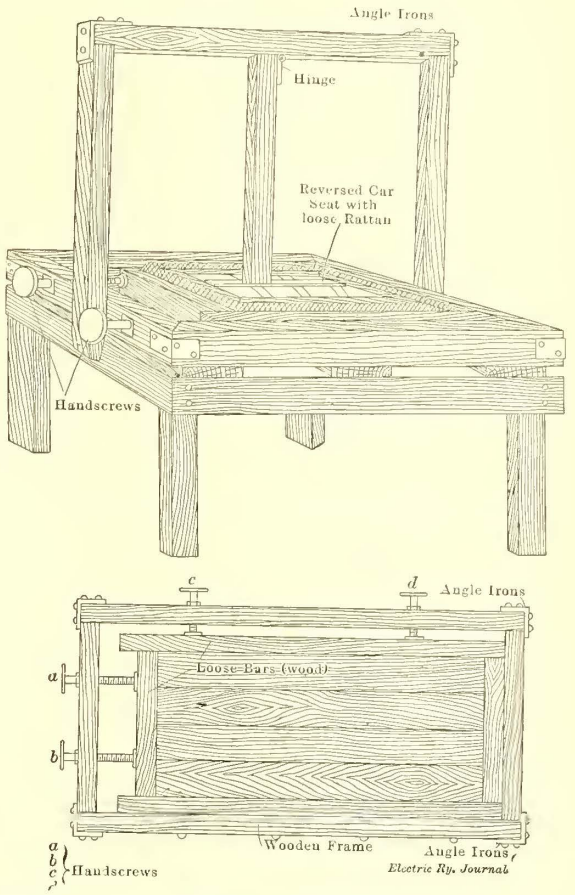
SEATING DEPARTMENT

Long experience with the troubles incident to rattan seats has led to several improvements in construction which may be of interest to other electric railways which have not enjoyed the benefits of expert labor for this class of maintenance.

The rattan seats, as originally purchased, were made very much alike except that in one form the strips of flat spring steel to which the spiral springs were attached were carried over the top of the wooden frame and nailed thereto; in the other form the steel strips terminated in a groove ½ in. deep and ¼ in. from the outside of the frame, the nails being tacked

A Portion of the Curtain Department

through the side of the frame. In the first construction the nails would gradually work their way up and eventually manifest themselves by penetrating the rattan and tearing the clothing of passengers. The second construction gave little trouble from nails, but in both cases the steel strips would break at the bends and their sharp, jagged edges would rip the rattan and cause even more damage than the nails. The seats, as now rebuilt, give absolutely no trouble from either of these sources. Furthermore, the new construction makes it possible to avoid considerable waste in spring steel because it is possible to use shorter lengths and these are often made up from old springs which formerly were discarded.



Press for Stretching Rattan Over the Seat Before Nailing

As shown in the sketch on page 630, the strips are riveted to the spiral springs as before, but they are carried only to within ½ in. to 1 in. of the side frames. The edges of these strips are bent back beforehand by a special machine, so that there is no possibility of sharp edges cutting through the seating. Over each spring steel strip there is copper-riveted a strip of canvas. This canvas is glued to the framework and carried around and nailed to the bottom of each side piece. As the nails are in the bottom of the frame their working out can do no damage. After these canvas strips have been installed the entire seat area is covered with a single piece of glued canvas which is tucked over and nailed to the bottom of the end-frame pieces. This large canvas cannot be tucked over the side frames because of the limited clearance afforded by the seat rails. Finally, as a cushion for the rattan, a piece of cow-hair felt, ½ in. thick, is glued to the large piece of canvas. In order to economize material the cow hair is sometimes glued on in two or three pieces. Where one piece is used glued retaining strips of canvas are nailed on at the ends only, but otherwise a strip of canvas is placed over each joint in the felt and the ends of the strip are tacked to the underside of the framing to prevent the shifting of the felt.

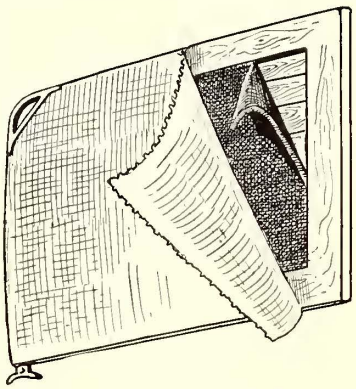
When the seat is ready for its covering of rattan it is placed in a press which is supplied with a bed of the proper size. One end and one side piece of the bed frame are adjustable, each being operated by means of a pair of screws, as shown in the sketch on this page. The seat covered with the loose rattan is placed upside down in the bed. Then the screws are applied while the seat springs are compressed from above by a hinged lever which presses against a cross-bar placed over the

seat slats. Thus the entire seat is under compression to permit the rattan to be properly tightened for nailing.

The company has not found it necessary to make any material changes in the construction of seat backs. The cow-hair felt used for the backs is ¼ in. thick.

CURTAIN AND MISCELLANEOUS LEATHER DEPARTMENT

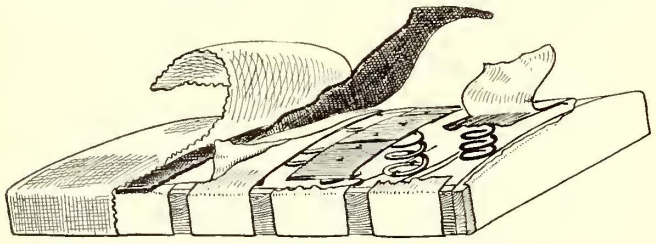
The department for the manufacture and repair of car curtains and for miscellaneous cloth sign and leather work is located at the Thirty-ninth Street shops. Formerly these activities were divided between the Fifty-second Street shop, which took care of the surface cars, and the Thirty-ninth Street shop, which served all the elevated cars. The consolidated shop not only manufactures and repairs car curtains, but also makes leather sleeves for platform guard chains, hand straps, fire-extinguisher straps, curtains for roller-type destination signs, mail bags, money bags, canvas aprons for snow sweepers, etc. All curtains are furnished with Hartshorn spring rollers and are made of pantasote. The fixtures are of the Curtain Supply Company's latest designs. In the repair of curtains the No. 88 ring fixture is now being installed to replace less efficient designs. The work of the department has been so successful that the company no longer buys complete curtains, except where they form an integral part of a lump bid for new cars.



Construction of Brooklyn Rattan Seat Back

The hand straps which are made by this department are usually furnished simply as finished thongs, the rivets being inserted at the depot, where the straps are installed on the rods.

As an indication of the amount of work done by this department it may be stated that about 150 curtains a day are renewed, in addition to which the department manufactures over 2000 curtains a year. During the past winter over 100 roller-type destination signs were rehabilitated for as many single truck cars. For hood use this form of sign has been largely superseded by a removable illuminated wooden block sign which was devised by the mechanical department. The construction and efficiency features of this sign were described and illustrated in the Electric Railway Journal of June 26, 1909.



Construction of Brooklyn Rattan Seat

It is the endeavor of the company to keep its curtain equipment in the finest possible condition. Consequently, curtains are repainted at definite intervals, even when they are otherwise in good condition. During the past winter, for instance, all of the curtains on the 452 air-brake cars, comprising 33 per car, were coated with pantasote paint. This work was done after some experiments with four or five varieties of this paint. Previously it was the custom to use two coats to secure a glossy finish, but it has been found possible to attain the same results with one coat by adding a thinning solution of japan drier. The freshly painted curtains are hung on rollers and permitted to dry for 10 hours, although they are fairly dry for use in little more than half that time.

The principal equipment of this department consists of one Wheeler & Wilson, one Singer and four Davis sewing machines. The last four machines are operated by shafting from one compressor motor and each is furnished with two pedals to permit any desired variations in speed. Female operators are employed for this class of curtain work.

A very important feature in connection with the operation of this department is the scrap collecting and handling system. The inspection and maintenance depots must send to this central shop all discarded curtain and other material which it uses, no matter in what condition such articles are. In this way it is possible to reclaim many springs, rods, screws, pieces of curtain cloth, etc., which otherwise would go to the scrap heap as waste.

REPORT ON THE ELIMINATION OF FREIGHT SURFACE TRACKS IN NEW YORK

The New York Central & Hudson River Railroad operates along the western or Hudson River water front of Manhattan Borough, New York, a surface steam railroad which practically is used entirely for freight traffic. In response to long-continued agitation that the tracks of this line should be placed either underground or overhead, a report on the merits of such changes was made on March 27 to the New York Board of Estimate and Apportionment by the borough officers. This report was based on an investigation by E. P. Goodrich, consulting engineer, Borough of Manhattan, and Harry P. Nichols, engineer in charge division of franchises, Board of Estimate and Apportionment. The principal points brought out were the following:

An elevated railroad along the water front, from Sixtieth Street downtown to the Battery, the most southerly part of Manhattan Island, for the common use of all of the railroads is not now required.

An elevated railroad along the water front from Sixtieth Street downtown to Canal Street, for the exclusive use of the New York Central Railroad, is not warranted by the traffic reasonably to be expected.

An elevated railroad for freight purposes should not be constructed on Manhattan Island except as a last resort and when all other methods have failed to give necessary relief. In any final scheme it would be desirable that the New York Central & Hudson River Railroad should have direct rail connection between its Sixtieth Street yards and its Thirtieth Street freight yards.

For the district lying between Sixtieth Street and Spuyten Duyvil, the most northerly part of Manhattan Island, the plan heretofore proposed by the New York Central, of eliminating grade crossings by carrying city streets over its tracks at its present grade, except between West 129th and West 138th Streets, where the grade of the railroad should be raised and the tracks carried on a viaduct, is, generally speaking, the plan that should be approved and required by the city.

For the district lying between Sixtieth and Thirtieth Streets a four to six-track subway under Eleventh Avenue should be built by the New York Central Railroad for its own use. For the district south of Thirtieth Street the committee suggests the use of so-called unit water terminals, to consist of twin float-bridges connected with a double-decked pier on which cars shall be landed at the water level and raised on a ramp to the second story, and from which they shall be led on a bridge at right angles across the water-front thoroughfare (West Street) to terminal warehouse buildings and terminal yards to be located on the opposite side. Nine such unit water terminals will be sufficient to handle the combined business of all the railroads at present carrying freight to and from the west side of Manhattan Island south of Thirtieth Street. These would replace 24 piers now used for railroad purposes south of Thirtieth Street.

In this connection it may be interesting to add that on March 31, R. P. Bolton, a New York engineer, submitted to the Public Service Commission of the First District an esti-

mate, according to which the New York Central & Hudson River Railroad could electrify its Hudson River water front trackage from Spuyten Duyvil to Fiftieth Street for $2,211.017. Mr. Bolton figured the cost of the electrification of the tracks at $387,000, transmission and distribution of current $250,000, substations and batteries $679,000, rolling stock $573,000, with charges for engineering, superintendence and miscellaneous to make the total of $2,211,017. These figures were submitted in a case brought against the railroad company wherein it was asserted that its operation by steam along Riverside Park constituted a public nuisance.

THREE-PHASE LOCOMOTIVES FOR THE GIOVI LINE, ITALY

The Giovi tunnel is situated between the stations of Pontedecimo and Busalla on the line between Genoa and Milan. The traffic is very heavy, as this is the most important line between Genoa, the greatest shipping center, and Milan, the greatest manufacturing center of Italy. Electrification became necessary on account of the impossibility of coping with the increase in traffic with steam locomotives and of improving the artificial ventilation of the tunnel owing to its great length. The three-phase system at 15 cycles as adopted on the Valtellina and Simplon tunnel lines was employed. The first order from the Italian State Railways to the Italian Westinghouse Company was for 40 locomotives for freight service, 25 of which were for the Giovi line and 15 for the Savona-San Giuseppe line from Savona to Turin, which is being electrified at present. The first locomotives were completed in July, 1908, at the Westinghouse Vado Ligure Works. Upon completion they were employed for a time in the Valtellina lines, pending completion of the Giovi tunnel electrification.

Three-Phase Electric Locomotive and Train, Giovi Railway

The new Giovi locomotive is built for freight service and has a normal operating speed of 28 m.p.h., but it can also be used for passenger service. The locomotive has also a 14-m.p.h. speed for switching and for regenerating energy when the train is running down hill. In considering the capacity of the locomotive, however, only the higher speed should be considered, since this is the normal one. The locomotive weighs only 60 tons, but its mechanical construction is such that the weight can be increased to 75 tons by means of ballast.

During the tests a train of 418 tons, exclusive of locomotives, was taken at 28 m.p.h. from Pontedecimo to Busalla, a distance of 6½ miles with a maximum grade of 3½ per cent, an average grade of 2.7 per cent and a minimum curve radius of 1200 ft. After this the train was taken back at 14 m.p.h., the locomotive being connected for regenerating power. The time allowed for one round trip was 140 minutes. After 20 hours of such continuous operation one round trip was made without forced ventilation of the motors with a temperature rise of the motors considerably less than 75 deg. C. The one-hour motor rating for the same temperature was 720 hp per motor, corresponding to a total tractive effort at the wheel circumference of 19,500 lb. During the test this rate was exceeded. A train of 380 tons, exclusive of the locomotives, can be accelerated to 28 m.p.h. in less than 200 seconds by two locomotives, one pushing and one pulling, on a grade of 3½ per cent and on a curve of 1200-ft. radius. The maximum starting torque is such that they can slip the wheels of the locomotive with its weight increased to 75 tons.

The motors are three-phase, 3000-volt, 15-cycle machines arranged to run in cascade and parallel, giving two synchronous speeds of 112½ r.p.m. and 225 r.p.m. Intermittent speeds are obtained by inserting rheostats in the circuit. The motors have double bearings, the outer one of which is built into the main locomotive frame and takes the thrust of the connecting rods and is provided with springs to take up all the motion or

changes of position due to shocks on locomotive frame, etc. The inner bearing carries the rotor and has for its function only the maintenance of the air-gap. The motors are mounted from below by means of a hydraulic jack. The complete change of a motor, including the connections to the side rods, may be easily made in two hours.

The control system contains a number of interesting features. Since the starting resistances are water rheostats it was necessary to design the secondaries of the motors for low potential; this was also desirable in order to have low potential on the slip rings. The low-potential secondaries require, however, the possibility of connecting one of the motors in cascade. The switch performing this re-connection of one of the stators from high voltage to low voltage is the only switching mechanism in the system, which has numerous contacts for heavier current. Since it is always operated without current, the care and cost of maintenance are very low. Furthermore, it may be operated by only two relays. The wiring needed in connection with the potential changing switch is reduced to a minimum by mounting the switch directly on the motor and handling it as a unit therewith. The switch extends into the cab of the locomotive from below and may be readily inspected by removing the protecting cover.

The use of water rheostats has proved very satisfactory. The water tank extends below the cab for air cooling. The height of water in the rheostat is regulated by air pressure. The regulating mechanism extends into the cab proper for convenient inspection.

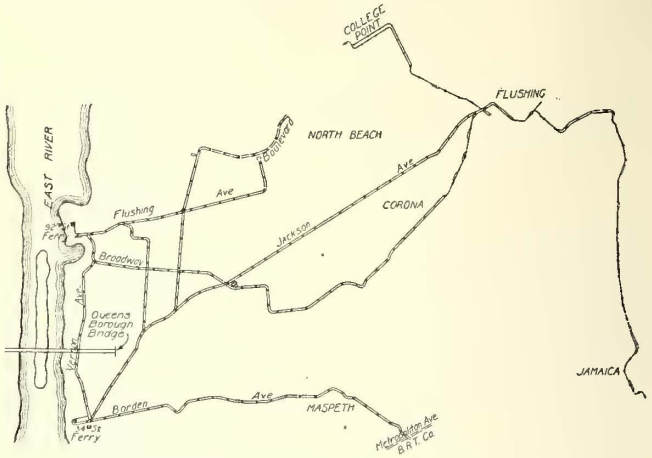
The only switch that is interrupted under current is the primary switch, but even for this switching conditions are very favorable because the current to be interrupted in the primary of induction motors with a wound secondary may be reduced practically to the magnetizing current by first inserting resistance into the secondary and then breaking the primary current. The excellent feature of the primary switch of the Giovi locomotive is that it serves as both an interruption switch and a reversing switch without requiring any additional contacts for reversal; this is accomplished simply by rotating the movable contact parts through a certain angle in order to reverse the motor.

The master control switch has two levers. One of the levers has four definite positions, corresponding to the two forward and backward speeds. The second lever controls the current taken by the motors. Every position of this lever determines positively the certain maximum current to be taken by the motors. Whenever the motor tends to take a current larger than corresponding to the lever position, resistance is automatically inserted into the secondary; the lever acts on the armature of a small induction regulator and thereby regulates the secondary potential of the regulator. The induction regulator secondary is connected to one coil of a relay which is wound in opposition to a second coil, the current of which is proportioned to the motor current. Whenever the effects of the relay coils are balanced the armature is in the middle position and the motor currents remain unchanged. As soon as the motor current increases the armature is attracted by the one coil and closes the relay circuit, which increases the resistance in the secondary. The fact that each locomotive can be set for a maximum current would make it possible to use the locomotive in multiple without a special multiple control; nevertheless a multiple control arrangement is provided. The multiple-control system not only permits the operation of locomotives of different wheel diameters in multiple and equally loaded, but also permits the loading of them differently with any desired ratio of load distribution. This is quite advantageous, as it is frequently desirable to keep the drawbar pull of a pulling engine within certain limits and let the pushing engine take care of the greater part of the load.

NEW TRANSFER SYSTEM

The New York & Queens County Railway has recently adopted a new form of transfer which prevents a pessenger, upon payment of one fare, from riding more than once upon any line or returning to the issuing line, and limits the passenger to a ride in the general direction of his initial trip.

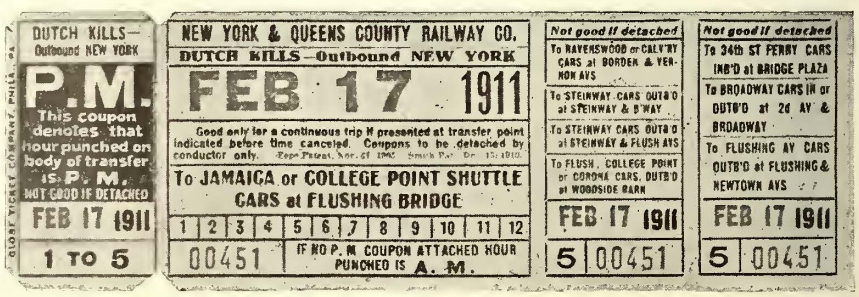
The general arrangement of the railway system is fan-



Map of New York & Queens County Railway

shaped, with its principal railway terminal at the Long Island City ferry to New York, and as transfers were issued at the intersection of every radial line with every crosstown line it was possible for a passenger to transfer from line to line and return to the issuing line and to his starting point and repeat the operation. To overcome this difficulty the company has recently introduced a form of transfer which is made up of a main stub or contract and detachable coupons. The main stub carries the name of the issuing line, the date, time limit and in some cases the point at which a passenger may transfer. The coupons attached to the body of the transfer may be one or two in number and entitle the passenger to transfer to any line indicated upon the coupon at the point designated. A coupon is not valid for passage apart from the body of the ticket upon which the time limit has been punched, so that every passenger who boards a car will pay a cash fare or surrender a transfer or the proper coupon.

When a passenger presents a transfer with coupons attached and desires to be transferred to still another line the conductor to whom it is presented detaches the proper coupon (either No. 1 or No. 2 as the case may be) and returns the remainder of the transfer to the passenger, provided another transfer point is marked upon it and the passenger requests the transfer for further use. From this it will be seen that a passenger may ride on four different lines for one fare; first, on the line on which he pays his fare; second, on one of the lines named on the first coupon; third, on one of the lines named on the second coupon; and fourth, on a line named on the body of the transfer. But they must be in the same general direction.



Transfer New York & Queens County Railway, with Coupons for Detachment When a Change of Cars Is Made

On outbound cars a green transfer is issued. On inbound cars a red transfer is issued. The transfers are printed for each day and have a p. m. coupon that is detached if the time indicated is an a. m. hour. The time limit allowed upon issuing is one and a half hours. At the end of each half trip the conductor places the transfers received in an envelope, upon the outside of which he records the number of transfers received and the number issued by him. This envelope is placed in a compartment leading to a locked box and remains exposed until the end of the next half trip, when it is dropped into the box.

The transfer used is illustrated herewith and is a combination of the Pope patent p. m. coupon and the Smith patent fare coupon. Mr. Smith, who designed the system, had charge of the transfer penalty litigation in the law department of the New York City Railway, and believes that this system gives the very liberal privileges that the New York statute requires and at the same time provides against abuses of the privilege. The system has been in effect for more than a month on the New York & Queens County Railway and has given satisfaction to both operating and auditing departments.

REPORT OF THE STANDARDIZATION COMMITTEE OF THE CENTRAL ELECTRIC RAILWAY ASSOCIATION

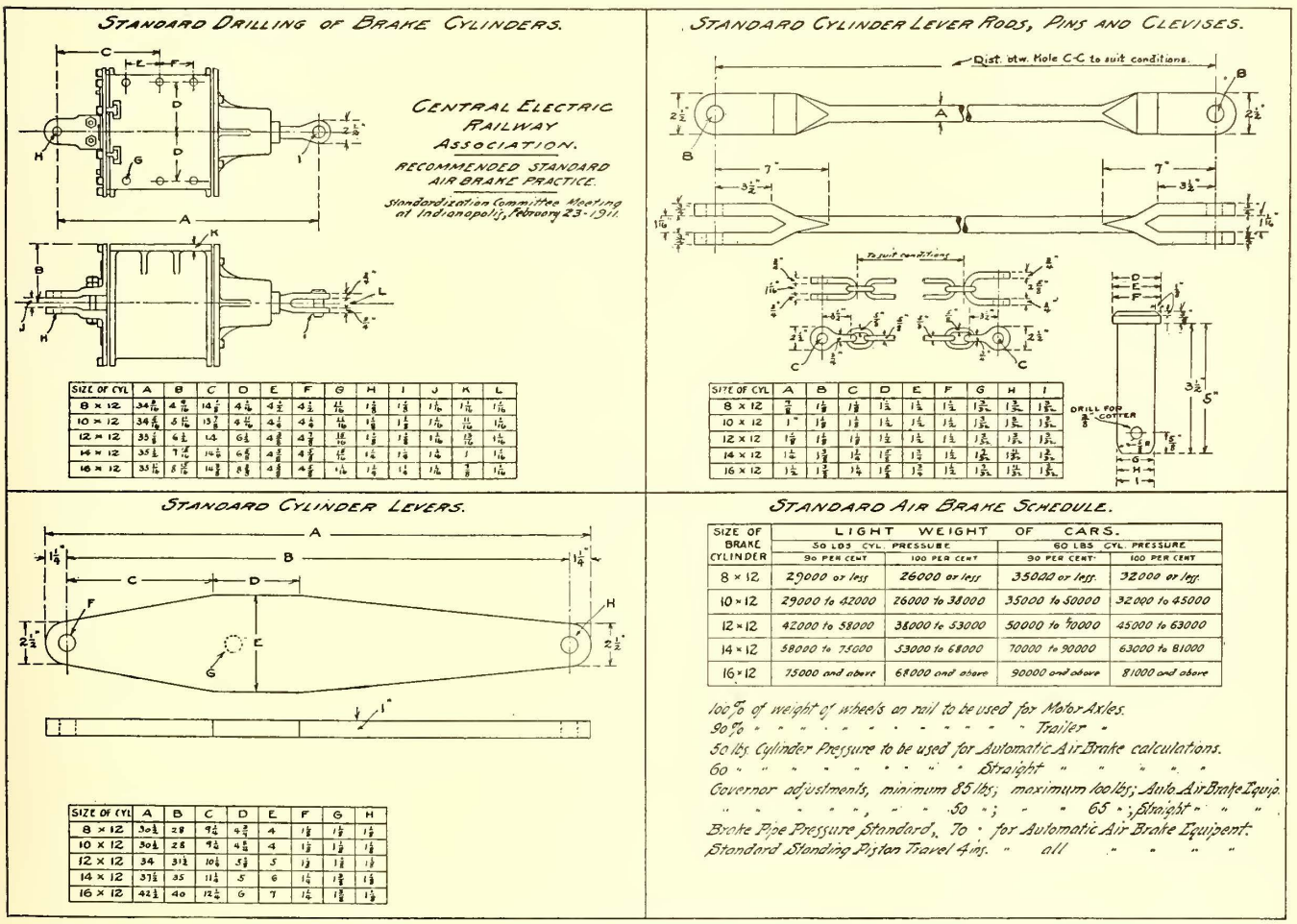
A drawing showing the proposed standards as regards the size of cylinders, length of piston travel, maximum and minimum air pressures, governor settings, etc., of air brakes recommended by the standardization committee of the Central Electric Railway Association is published herewith. These standards were presented to the association by the committee at the meeting held at Columbus on March 23, and, as stated in the last issue of this paper, copies are being sent to the members of the association so that the subject can be considered at the next meeting of the association, to be held June 22.

With this is a report of the meeting of the standardization committee held at Indianapolis on Feb. 23. Those present at this meeting were H. H. Buckman, chairman, L. W. Jacques, L. M. Clark and W. H. Evans, all members of the committee. In addition, representatives were present from the following manufacturing concerns: National Brake & Electric Company, Westinghouse Traction Brake Company, Allis Chalmers Company, J. G. Brill Company and Standard Truck Company. The report says:

"Considerable discussion was had on the subject of standardization of air brake equipment as to the parts in general and in detail. It was found that the manufacturers differed considerably in the character of the air brake compressor cradle suspension, and it was decided on a motion that this subject be held over until a future meeting. In the meantime the matter would be investigated among the different companies. It was upon motion decided that a blueprint be prepared covering all the dimensions of brake parts which have been discussed and decided upon at this meeting which are recommended for adoption as standard, this covering the weights of cars and the size of cylinders for same, the air pressure recommended, the piston travel, maximum and minimum variation in air brake pressure, governor settings, etc.

"As a result of the discussion and deliberation of the committee at this time such a print has been prepared and is hereby submitted with the recommendation that it be adopted as standard. Further adopted on resolution that we recommend as standard a total truck leverage ratio of 6 to 1 for long base trucks with inside hung motors and a ratio of 9 to 1 for short wheelbase trucks having outside hung motors.

"The question of determining the adoption of a standard sign or national insignia for electric traction railway material was considered, but was deferred until a future meeting.



SIZE OF CYL	A	B	C	D	E	F	G	H	I	J	K	L
8 × 12	34 5/16	4 7/16	10 1/2	4 1/16	4 1/2	4 1/2	11/16	1 1/8	1 1/8	1 1/16	1 1/16	1 1/16
10 × 12	34 5/16	5 11/16	13 3/8	4 11/16	4 1/2	4 1/2	11/16	1 1/8	1 1/8	1 1/16	1 1/16	1 1/16
12 × 12	35 1/2	6 1/2	14	6 1/2	4 5/8	4 7/8	13/16	1 1/8	1 1/8	1 1/16	1 1/16	1 1/16
14 × 12	35 1/2	7 1/16	14 5/8	6 5/8	4 5/8	4 5/8	1 1/16	1 1/8	1 1/8	1	1	1 1/16
16 × 12	35 1/2	8 1/16	14 5/8	8 5/8	4 5/8	4 5/8	1 1/16	1 1/8	1 1/8	1 1/16	7/8	1 1/16

SIZE OF CYL	A	B	C	D	E	F	G	H	I
8 × 12	7/8	1 1/8	1 1/2	1 1/2	1 1/2	1 1/2	1 3/32	1 3/32	1 3/32
10 × 12	1"	1 1/8	1 1/2	1 1/2	1 1/2	1 1/2	1 3/32	1 3/32	1 3/32
12 × 12	1 1/8	1 1/8	1 1/2	1 1/2	1 1/2	1 1/2	1 3/32	1 3/32	1 3/32
14 × 12	1 1/8	1 1/8	1 1/2	1 1/2	1 1/2	1 1/2	1 3/32	1 3/32	1 3/32
16 × 12	1 1/8	1 1/8	1 1/2	1 1/2	1 1/2	1 1/2	1 3/32	1 3/32	1 3/32

SIZE OF CYL	A	B	C	D	E	F	G	H
8 × 12	30 1/2	28	9 1/16	4 3/4	4	1 1/8	1 1/8	1 1/8
10 × 12	30 1/2	28	9 1/2	4 5/8	4	1 1/8	1 1/8	1 1/8
12 × 12	34	31 1/2	10 1/2	5 1/8	5	1 1/8	1 1/8	1 1/8
14 × 12	37 1/2	35	11 1/2	5	6	1 1/4	1 1/8	1 1/8
16 × 12	42 1/2	40	12 1/2	6	7	1 1/4	1 1/8	1 1/8

SIZE OF BRAKE CYLINDER	LIGHT WEIGHT OF CARS. 50 LBS CYL. PRESSURE. 90 PER CENT	50 LBS CYL. PRESSURE. 100 PER CENT	60 LBS CYL. PRESSURE. 90 PER CENT	60 LBS CYL. PRESSURE. 100 PER CENT
8 × 12	29000 or less	26000 or less	35000 or less	32000 or less
10 × 12	29000 to 42000	26000 to 38000	35000 to 50000	32000 to 45000
12 × 12	42000 to 58000	38000 to 53000	50000 to 70000	45000 to 63000
14 × 12	58000 to 75000	53000 to 68000	70000 to 90000	63000 to 81000
16 × 12	75000 and above	68000 and above	90000 and above	81000 and above

Proposed Standard for Air Brake Equipment, Central Electric Railway Association

HEARING BY MASSACHUSETTS COMMISSION ON PETITION FOR LOWER FARES

The Massachusetts Railroad Commission gave a hearing at Boston on March 31 upon the petition of citizens of Holliston for a reduction of the fare between Holliston and South Framingham on the Milford & Uxbridge Street Railway. W. M. Prest, of Boston, represented the petitioners and Wendell Williams, Milford, Mass., appeared on behalf of the company with William Adams, its superintendent. The petitioners contended that the fare should be reduced from 10 cents to 7 cents on the line in question. Prior to the beginning of the hearing the company informed the petitioners that their request for a 7-cent fare practically reopened the case of last summer, when the commission decided that the existing charges were not unreasonable, and, in order to enable some definite issue to be raised, submitted the following questions to the petitioners with the approval of Chairman Hall, of the commission:

"1. Was the company at the time of its increase of fare between Holliston and South Framingham justified in attempting to secure additional earnings by increasing its fares at some point or points?

"2. Was from Holliston to South Framingham a reasonable and proper point at which the fare should be increased in order to yield additional income?

"3. If not, at what point or points on the company's road should fares be properly increased for this purpose?

"4. Would the proper method of increasing its income be to change its unit of fare from 5 cents to 6 cents over the entire road, or, if over a portion of it, what portion?

"5. Does the increase from 5 cents to 10 cents between Holliston and South Framingham yield more additional income than the company is entitled to?

"6. Will an increase from 5 cents to 7 cents between Holliston and South Framingham yield all the additional income to which it is justly entitled?

"7. If part of the additional income required ought to be secured by an increase of fare at some other point or points than between Holliston and South Framingham, please state at what point or points."

The petitioners did not undertake to answer the above inquiries, but confined their efforts mainly to a discussion of the company's earnings and expenses as derived from returns to the board, from figures prepared by the company for recent months, and to the cross-examination of Mr. Adams.

Mr. Williams stated that the petitioners desired a 7-cent fare for a distance of about 6 miles, the fare having been 10 cents since June 1, 1910, and previously for some years 5 cents. An extended hearing was given by the board upon a petition protesting against the raise from 5 cents to 10 cents, and by an order passed in October, 1910, as a result of the hearing and subsequent careful investigation of the board the increase of fare was held not to be unreasonable. Mr. Williams said that the company knew of no change of situation or additional facts bearing upon the question that could justify the board in changing its determination.

Mr. Williams submitted two statements showing the comparative earnings and expenses, with charges, for the two years, 1911 being partly estimated. He contended that these figures showed conclusively that the financial condition of the company was not such as to warrant a decrease in fares. It was possible that the total net earnings for the fiscal year 1911 might equal nearly or quite 6 per cent on the common stock of the company, but if a 6 per cent dividend should be declared nothing would be left for depreciation. The company could not safely pay 6 per cent even if the earnings should amount to that. There were many things to be provided for, including new cars and expenditures resulting from decay and obsolescence. If the company could not be permitted to accumulate something for this purpose it was a question how the road could be maintained. The company was now operating 10 single-truck side-seat cars 16 years old which ought to be replaced by new and modern cars at an expense of about $50,000. "This is but one instance," said Mr. Williams. "From where is the money to come for such purposes unless from accumulated earnings?"

The statement submitted by the company showed the following dividend record for the last six years: 1905, nothing; 1906, nothing; 1907, 3 per cent; 1908, 1 per cent; 1909, 3 per cent; 1910, 4 per cent; an average of 1.83 per cent. Counsel argued that stockholders are entitled to a larger return than this, and that it would take many years of substantial dividends to make a reasonable average. He said that the proper administration of the company required an annual surplus of about $25,000, but under present conditions this was impossible to realize. Even a 5 per cent dividend paid from the estimated earnings of 1911 would leave a surplus of only $4,000. About 36 miles of track are now in operation on the road. Mr. Williams said:

"If it is assumed, as we contend it must be, that the company is entitled to its present income, the only question is whether or not it is discriminating by imposing an unreasonable fare between Holliston and South Framingham. A table of fares is submitted which shows that it is not excessive as compared with the fares on other street railways between places similarly situated, or as compared with other points on this railway. The road must be considered at a whole, as has been frequently suggested by the board. In any country street railway system there are certain fare zones that are not self-sustaining and could not be made so without very excessive fare. Other points must make up to a degree for these losses. That there are other points on the road that would seem to be entitled to a reduction of fares if earnings warranted can be seen by an examination of the tables."

Mr. Williams said that there was a strong feeling in the company's territory against any discriminatory reductions in fares, and he submitted petitions signed by the selectmen of Hopkinton, Mendon, Hopedale, Uxbridge, Medway and Milford against the reduction desired.

The reason for the former existence of a 5-cent fare was the acute competition between the street railway and the Boston & Albany Railroad. Mr. Williams stated that this competition had turned a profitable portion of the street railroad into an unprofitable one for a long period. If there were no other reason, the danger of inviting such competition again would be a sufficient reason for not reducing the fare as long as it was not excessive as compared with other fares. In closing, he said:

"The petitioners have not been consistent. At their first hearing their contention was that the increase of fare was unjust because many of the residents of Holliston traveled back and forth daily to South Framingham. This difficulty was met by a suggestion from the board and a workingmen's ticket was introduced by the company. The petitioners have now changed their tactics entirely, and no longer deem the regular daily travel important, but want a fare substantially equal to the workingmen's ticket for everybody."

In the examination of Superintendent Adams the point was brought out that the company had been obliged to face an unusual outlay last year between the disputed municipalities in connection with State highway construction. Wages have been raised from 22½ cents to 25 cents per hour, making the operating cost about $8,000 per year higher with the same service. The price of copper had declined, as contended by the petitioner, but the company had had no occasion to buy copper, and hence had not reaped any benefit from the reduction. Rails and coal were no cheaper this year. Mr. Adams also stated that the operating expenses of the company per car mile, 17.4 cents, include taxes, thus disposing of the petitioners' claim that as an average of 16 cents per car mile would be a proper figure for a country road, not including taxes, the respondent's costs were high. While the returns of the company showed that economies had been effected in recent years, there appeared to be little further opportunity for extensive savings, although from time to time small gains in efficiency may be anticipated. The board closed the hearing at the conclusion of the arguments.

MEETING OF THE COMMITTEE ON PASSENGER TRAFFIC

The meeting of the Transportation & Traffic Association's committee on passenger traffic was held at 29 West Thirty-ninth Street, New York, on March 31. Those present were L. D. Pellissier, secretary, treasurer and claim agent Holyoke Street Railway (chairman); Frank Caum, general manager Scranton Railway, and F. G. Buffe, publicity manager Illinois Traction Company. T. A. Cross, general manager United Railways & Electric Company, Baltimore, Md., and J. E. Gibson, general superintendent Kansas City Railway & Light Company, were unable to be present.

Mr. Pellissier, in opening the meeting of the committee, stated that the executive committee of the Transportation & Traffic Association had instructed the committee to devote its attention this year to the consideration of the development of "every-day business," rather than the development of park or summer business, as the latter subject had been discussed pretty thoroughly by committees of the association in previous years. He then referred to a suggestion made at the last convention by M. C. Brush, of Boston, that the railway companies should "co-operate with the secretaries of chambers of commerce and manufacturers' associations in different localities in endeavoring to bring to their communities manufacturing and other business interests having resources that would encourage the laboring class of people to come there." In further discussion of this point Mr. Brush said that he believed the financial return from expenditures along such a line would be far greater than that obtained from an effort to induce 500 people to go to a park.

A general discussion then followed on the subject of boards of trade. Mr. Buffe stated that the Peoria Board of Trade had recently been reorganized. Peoria has about 65,000 population, and its Board of Trade now consists of about 1000 members. The dues have recently been reduced to $6 a year and the board now includes practically all of the active business men in Peoria who take an interest in the city, whether they are engaged in business on their own account or are on salaries. The local railway company has about 26 employees who are members of the board and are taking an active interest in its activities. Meetings are held frequently and the secretary is a man who has had long experience as a traffic manager on a steam railroad. This secretary keeps in touch with those new industries which might locate in Peoria and urges them to do so. He also corresponds with the different national organizations and presents to them the advantages of Peoria as a convention city. Among other recent work of the Peoria Board of Trade, Mr. Buffe mentioned that it had been largely instrumental in the erection of a large hotel in the city. Members of the Board of Trade had subscribed for stock in the hotel largely because they had felt that it would be of benefit to the City of Peoria.

Mr. Pellissier stated that the Board of Trade in Holyoke had also recently been reorganized and now has about 1000 members. The dues are $5 per year. At Holyoke also the Board of Trade has been instrumental in securing the selection of that city for several large conventions.

Mr. Caum stated that at Scranton the dues of the Board of Trade were $25 per year, and the board had a smaller membership than those mentioned in other cities.

A discussion followed as to the amount of additional traffic which a railway company would gain when a convention was being held in a city, and it was decided to incorporate in the data sheet this year some inquiries in regard to boards of trade and their influence in encouraging the growth of the cities in which they are located.

Other points which were considered in their bearing upon the development of "every-day business" were the establishment by a railway company of an industrial department or land department for encouraging the location along the line of different industrial plants. It developed that the Illinois Traction Company had a department of this kind. Other subjects discussed were advertising for "every-day business"; traffic circulars, their cost and method of distribution; newspaper advertising, whether purchased on the cash or mileage basis; theater and other all-the-year advertising; company publications; the stimulation of traffic through the offer by merchants of free railway tickets to customers who purchase a certain amount of goods; the free advertisement of theaters and other traffic producing attractions in or on the cars; and different forms of commutation rates.

SUGGESTED TRANSFER LAW

Secretary Donecker of the American Electric Railway Association has just issued a circular calling attention to the transfer law suggested at the last convention of the Transportation & Traffic Association by L. S. Hoffman, general solicitor Public Service Railway of New Jersey. At a recent meeting of the executive committee of the American Association the subject was discussed and the secretary was directed to place a reprint of this law in the hands of each member-company with a statement that it bore the official sanction of the association and a recommendation that the member companies should make a strong effort to place this suggested remedy on the statute books of their respective States, particularly where no law on the subject already exists. The proposed law follows:

"No transfer ticket or written or printed instrument giving or purporting to give the right of transfer to any person from a public conveyance operated upon one line or route of a street surface, elevated or underground railroad to a public conveyance upon another line or route of a street surface, elevated or underground railroad or from one car to another car upon the same line of street surface, elevated or underground railroad, shall be issued, sold or given except to a person lawfully entitled thereto. Any person who shall issue, sell or give such a transfer ticket or instrument aforesaid to a person not lawfully entitled thereto, and any person not lawfully entitled thereto who shall receive, with intent to use for passage, or who shall use or offer for passage any such transfer ticket or instrument, or shall sell or give away such transfer ticket or instrument to another with intent to have such transfer ticket used or offered for passage after the time limited for its use shall have expired, shall be guilty of a misdemeanor, and, on conviction thereof, shall be punished by a fine not exceeding $100 or by imprisonment for a term not exceeding six months, or both."

PLANS FOR RAILROAD ELECTRIFICATION IN CHICAGO

The commission on electrification of the Chicago Association of Commerce held a meeting on April 1. A sub-committee, composed of Milton J. Foreman, W. A. Gardner and Harrison B. Riley, had prepared a report on the scope of the investigations which are to be made. These investigations are to be made according to the following plan: (1) The necessity for electrification; (2) the mechanical feasibility considered from a scientific standpoint and with all the engineering possibilities, impossibilties and problems; (3) the financial feasibility of the undertaking, whether the cost is prohibitive and whether the results will in every way be commensurate with the cost. Permanent officers for the electrification commission were elected as follows: Chairman, Jesse Holdom, lawyer; vice-chairman, T. E. Donnelly, chairman of city smoke commission, and secretary, F. H. Rawson, president Union Trust Company. The finance committee will be made up of Mr. Holdom, Howard G. Hetzler, president of the Chicago & Western Indiana Railroad, and Darius Miller, president of the Chicago, Burlington & Quincy Railroad. The sub-committee appointed to select a chief engineer and a corps of assistants was not ready to report. The committee expects to make definite arrangements for headquarters and to report about these at a meeting to be held on April 14.

LECTURES TO EMPLOYEES AT KANSAS CITY

The Metropolitan Street Railway Company of Kansas City, Mo., has initiated the plan of providing regular weekly lectures on train service to its employees. W. C. Harrington and S. M. James, the assistant general superintendents of the company, are the officials upon whom this duty for the most part devolves. The lectures are brief and straight to the point and seem to have a good effect on the men. The following are a few excerpts from Mr. Harrington's talk on March 9 before the men at the Ninth and Brighton carhouse:

EXTRACTS FROM TALK

"Care is the first requisite of successful train service. To please the passenger and to please the company for which you work you must be careful. To be careful does not mean that you must be careful only in following the rules and regulations. It means that you must be careful to see that all is clear before you start the car or give a signal for its starting. To be careful that you make your time-point and reach the terminal on time is of no avail if you maim several persons in doing so. Be careful of the passenger first of all, and then be as careful as you can to live up to the rules. No man or set of men can make a set of rules to run the world or a part of the world. Neither can a man make a rule to run a street railway without the co-operation of the men who operate the cars. If the rule says that a stop should be made at a certain point and you stop at that point and have an accident just before you get to that point you observe the rule of your company—but you break a greater rule, the rule of public safety. Do your best and listen to the word of the other fellow who has been through it all before and you will succeed.

"Another thing I should like to impress upon your minds is: You must live within your means. If you spend more than you earn you set a bad example. You may have the funds and the bank account to draw from, but that is not good for the young man who is just starting in. If some new man sees you cutting a dash he will begin wondering where you get the funds, and not knowing will probably guess wrong.

"You are not heroes in the performance of your duties, but you are in a position where you may be called upon any moment to prove yourself a hero. If you stop a runaway horse you are a hero. If you prevent an accident you are just performing your duty, but your duty at times calls for more heroism than does the stopping of many runaways.

"And as a parting subject I should like to place the question before you: 'Do you believe that practical men are made in a shorter time in any place in the country than they are here?' We often hear of men obtaining regular runs in a month or two in some other place, but we rarely ever heard of the place being close at hand. Now, let me tell you, the only reason for advancing a man is good service. If some man fails to render good service he is let out and the man who can render the service is advanced. If we hear of men advancing at a rapid rate it is safe to say that the company which is advancing them so fast is also letting others out at a wholesale rate.

"Do your work, do it right and no man can let you out of this service without a cause, while Mr. Egan is at its head."

LONDON, BRIGHTON & SOUTH COAST ELECTRIFICATION

W. Forbes, general manager London, Brighton & South Coast Railway, has denied in the London *Times* the statement generally published that that company has decided to completely electrify its lines, consisting of some 480 miles of track. The facts are that, encouraged by the success which has attended the electrification of its South London line, the company is now engaged in equipping for electric traction an additional 15 miles of railway. This is the only work at present authorized, although Mr. Forbes states that it will almost certainly be followed by the electrification of certain other short sections. Beyond this, however, there is no present intention of proceeding with any scheme of general electrification.

INVESTIGATION OF PUBLIC SERVICE COMMISSION

In connection with the investigation which John N. Carlisle is making of the New York Public Service Commission, First District, at the request of Governor Dix, announcement was made that a public hearing would be held at the Engineering Societies Building, New York, on April 4. When this meeting occurred Mr. Carlisle announced that it had been called to afford an opportunity to any who desired to make complaints regarding the work of the commission. He had received a letter on the subject from F. W. Whitridge, receiver of the Third Avenue Railroad, which he said he would make a part of the record. Mr. Whitridge's letter said in part:

"As a receiver of the Third Avenue Railroad, I have been attacked, regulated and harassed by the Public Service Commission of the First District in a way which is explained in my replies to the communications of the commission. All of these have been printed and are public property. I have never taken the initiative in attacking the commission at any time, and practically the whole of my writings in respect to it are in the nature of replies. I do not care to take the initiative now, but if there is any assistance which I can give you, I am entirely at your service."

Mr. Carlisle then asked if any of the few who were present wished to appear. As there was no response, he said he would wait a few minutes before adjourning the hearing. As no one appeared to testify, Mr. Carlisle made a brief statement regarding the progress of his work. He said that he had been directed by Governor Dix to make the investigation into the affairs of the First District commission. He had talked with the employees in order to become familiar with their duties, and had examined the work of the commission. An auditor from the Second District commission was now making an investigation of the books of the First District commission. The work of examination of the commission would be continued, Mr. Carlisle said, until its completion, when a report would be made to the Governor. Among those who attended the hearing were Travis H. Whitney, secretary, and L. T. Harkness, assistant counsel of the First District commission.

LA SALLE STREET TUNNEL OF CHICAGO RAILWAYS

The steel tubes of the new La Salle Street tunnel of the Chicago Railways Company were successfully lowered to the river bed on April 2. These tubes, it will be remembered, were built of steel plates and were floated to the location of the tunnel. There are two tubes, each 278 ft. long, built as a single structure and each of sufficient diameter to accommodate an elevated railroad car of the type operated in Chicago. In order to sink these tubes successfully into place in a trench which had been dug in the river bed, the controlling dams at Lockport on the Drainage Canal were closed seven hours in advance of the tube lowering. This allowed the water in the Chicago River to come to rest so that the long steel tubes could be lowered into place between the headings which had been built on opposite sides of the river. The submersion of the steel-tube structure, which weighs about 3000 tons, was accomplished by pumping water into the tubes. Two barges carrying steel girders were placed on opposite sides of each end of the tubes, and by means of donkey engines and cables supported from the girders, the downward movement of the full length of the steel structure was controlled. Now that the tubes are in place in the river bed the work of completing the approaches will be hastened and it is expected that within a few months the cars of the Chicago Railways Company will be running through the new tunnels.

An Edison-Beach single-truck storage-battery car has been put in operation on the York and Dauphin Streets line in Philadelphia. It weighs 13,100 lb. and has a seating capacity for 26 passengers. Mayor Reyburn participated in the trial trip.

THROUGH ROUTES AND JOINT RATES BETWEEN ELECTRIC AND STEAM LINES

A decision upholding the principle of through routes and joint rates between electric interurban and steam railroads on non-competitive interstate traffic was rendered by the Interstate Commerce Commission on March 14, 1911. The case involves the Cincinnati & Columbus Traction Company as complainant and the Baltimore & Ohio Southwestern Railroad and the Norfolk & Western Railway as defendants.

The interurban company was organized in Ohio in 1901 and its line as constructed in 1910 extends from Norwood, a suburb of Cincinnati, to Hillsboro, 53 miles. The mileage is wholly in Ohio. This company asked an order from the commission requiring the steam railroads "to establish connections and joint rates for the interchange of interstate traffic."

Commissioner Harlan wrote the report of the commission, which says that the defendants, before contesting the issue on the general merits, interposed objections of a technical nature. These he discusses in part as follows:

"1. The legal right of the complainant to demand a physical connection with the defendants is questioned. Decisions of the Supreme Court of Ohio are cited to show that interurban electric railways are classified in that State as street railways, and are controlled by other statutes than those relating to steam railways. With respect to the matter of fences, gates, crossings, clearances, liability to employees and track elevation the requirements imposed on electric lines under the local laws are said to differ materially from those imposed on steam roads. The State courts, as we are advised, have definitely held that the laws relating to steam railroads are not to be understood as being applicable to electrically operated roads unless that intention expressly appears. One statute to which special reference is made contains a provision as follows:

"'Steam railroad companies as between themselves, and interurban and electric railroads as between themselves, shall afford reasonable and proper facilities for interchange of traffic between their respective lines, for forwarding and delivering passengers and property, and shall transfer and deliver without unreasonable delay or discrimination cars, loaded or empty, freight or passenger, destined to a point on their own or connecting lines.'

"The defendants contend that under this provision the complainant, being an interurban and an electrically operated line, is expressly precluded from demanding a track connection with either of the defendant steam lines and is also precluded from demanding an interchange with them of equipment and traffic. But under the laws of Ohio the complainant seems to be a common carrier of persons and property and is actually engaged in the transportation of both classes of traffic. It also carries express matter. On its line are shippers and towns that desire, in addition to the local service, access to and from interstate points on the public highways operated by the defendants; and in this proceeding we are asked to open these highways to their interstate traffic by requiring the defendants to connect their lines with the line of the complainant and to establish with it through routes and joint rates. Under the act to regulate commerce as amended express power is given us to grant such relief. A local law under which an electrically operated railway may have no right to demand a switch-track connection and interchange of traffic with a steam railway may be controlling in so far as it relates to traffic moving wholly within the State; but it cannot be permitted to operate as an impediment to the movement of interstate traffic after the Congress has legislated upon the subject by specifying the grounds upon which interstate shippers may demand such connections and interchange of traffic.

"2. It is also contended that the proper parties complainant are not before us, and that we are therefore without jurisdiction to order the relief asked. The petitioner made application to the defendants for a switch-track connection and, being refused, instituted this proceeding upon its own complaint. The petitioner, at a subsequent hearing, filed with the commission two letters addressed to the complainant, one by a general merchant at Marathon, and the other on behalf of a lumber company of Hillsboro, both being points on the line of the complainant. The writers of these letters had given testimony tending to support the general allegations of the complaint. An application that they be made co-complainants, prepared by the attorney of the complainant on the authority of these letters, is also of record. To this application the defendants objected, insisting that the letters and application cannot be regarded as having the force and effect of making the two shippers co-complainants in the proceeding. They also contend that no application in writing for a switch-track connection has been made by these shippers to either of the defendants, and that the petition must therefore be dismissed.

"The letters of these two shippers, in connection with their testimony and their petition to be made co-complainants, seem to us not only sufficient for all practical purposes to bring them before us as co-complainants and to serve as their application in writing for a switch-track connection, but sufficient to give the defendants full notice and to advise the commission of their interest in the questions at issue. On the other hand, the testimony offered by the defendants seems to cover the entire ground, and in making these objections it is not suggested that any additional testimony is required by the presence on the record of these two shippers as co-complainants or that further testimony is in fact available. Inasmuch as the whole situation is fully disclosed and we are in a position to protect the legal and substantial rights of all the parties in interest, we think we may fairly find, as we do, that the necessary parties complainant are before us and that all the requirements of the act, in order to give us jurisdiction of the subject matter, have been observed. Moreover, if the record when closed was defective on these grounds the defect may be held to have been cured by recent amendment to the act."

The decision then takes up the merits of the case, saying in part:

"The first inquiry is whether a switch connection, using the language of the act, 'is reasonably practicable and can be put in with safety and will furnish sufficient business to justify the construction and maintenance of the same.' On this point we think the record leaves no room for doubt. A physical connection with the defendant the Baltimore & Ohio Southwestern Railroad at one time existed at Madeira and also at Hillsboro Junction. At the same time there was also a connection with the line of the Norfolk & Western Railway at the latter point. They were put in when the line of the complainant was under construction, and were removed after its completion, apparently in accordance with a previous understanding to that effect. It is not to be doubted that it is reasonably practicable to restore these connections at those points or to put connections in elsewhere, or that when restored or put in elsewhere they can be operated with safety. Nor can it be doubted that there will be sufficient traffic to and from points on the line of the complainant reasonably to compensate the defendants for constructing, maintaining and operating such switch connections with the complainant.

"The complainant also demands through routes and joint rates to and from all interstate points reached by the defendant lines and their connections. (*a*) We may not require any railroad involuntarily to embrace in a through route substantially less than the entire length of its road between the *termini* of the proposed through route. (*b*) We may not establish through routes and joint rates between a steam railroad and a street electric passenger railway that does not transport freight in addition to its passenger and express business. The first of these limitations must, of course, be observed in all cases; the second has no application in connection with this complaint.

"This is the first occasion upon formal complaint that we have had to examine the amended provision. But one point that seems to be entirely clear is that, although the complaint was filed before the amendment became effective, we can act only under the authority that we now have. We gather also

from a careful reading of the amended clause that it was the purpose of the Congress to widen the scope of our powers to establish through routes and joint rates rather than to narrow them, and to leave in the commission full discretion to act in such cases in the light of all the facts and circumstances and according to what may seem wise, fair, reasonable and equitable in each case. We shall dispose of this complaint with that understanding of the extent of our authority.

"For a distance of about 6 miles eastwardly from Norwood the line of the complainant not only parallels the line of the Baltimore & Ohio Southwestern Railroad, but practically adjoins the right-of-way of that defendant. A few miles farther to the east it approaches and at Perintown practically adjoins the right-of-way of the Norfolk & Western Railway and parallels that road for a few miles to Stonelick, at which point it is only about a mile distant from the Norfolk & Western Railway. Its station at Norwood also immediately adjoins the stations of the defendants, the Baltimore & Ohio Southwestern Railroad and the Cincinnati, Lebanon & Northern Railway. For a distance of 4 or 5 miles out of Hillsboro, its eastern terminus, the complainant's line again parallels the tracks of the Baltimore & Ohio Southwestern Railroad, the rights-of-way of the two lines being immediately adjoining. It was at a point about 1¼ miles west of Hillsboro that the line of the complainant was formerly connected by a switch track with the line of the Baltimore & Ohio Southwestern Railroad and also with the line of the Norfolk & Western Railway. On that end of the line are the villages of Hoagland, Fairview and Allensburgh, which are, respectively, 1½ miles, 1 mile and 3 miles distant from a station on the line of the Baltimore & Ohio Southwestern Railroad, but much more distant from any station on the Norfolk & Western Railway. They are small communities with no commercial enterprises of such character that they may be said not to be reasonably well served at this time, so far as interstate shipments are concerned, by the Baltimore & Ohio Southwestern Railroad. Among all the witnesses that testified none resided at any of these places, and therefore the record discloses no complaint of inadequate transportation facilities at these points or the need of additional facilities. At the western end of the line are Madisonville, Madeira, Milford, Perintown, Stonelick and Boston, some of which are practically within a stone's throw of either the Baltimore & Ohio Southwestern Railroad or the Norfolk & Western Railway. Boston, the most distant of the points last mentioned, is about 5 miles by the country roads from Batavia and something less from Baldwin, stations on the Norfolk & Western Railway; it is not less than 8 miles from the nearest station on the tracks of the Baltimore & Ohio Southwestern Railroad. Dodsonville, toward the eastern end of the complainant's line, is also 4 or 5 miles distant by wagon road from any station on the Baltimore & Ohio Southwestern Railroad and as much as 8 miles from the nearest station on the Norfolk & Western Railway. Between that point on the east and Boston on the west are a number of towns and villages that are located from about 5 miles to as much as 10 or 12 miles by wagon road from the nearest stations on the lines of one or the other of the defendants.

"Under the principles announced in Chicago & Milwaukee Electric Railroad Company vs. I. C. R. R. Company, 13 I. C. C. Rep., 20, we would not open through routes and establish joint rates for Norwood or Hillsboro because both places now reach all interstate points over each of the defendant lines. Moreover, through routes and joint rates between interstate points and Norwood and Hillsboro, in connection with the complainant's line, could not lawfully be required under the act as lately amended. Nor should we open through routes and establish joint rates between interstate points and Madisonville, Madeira or Hoagland over the complainant's line in connection with the Baltimore & Ohio Southwestern Railroad, because those points are already served by the latter line. Nor should we under the views announced in that case open through routes and joint rates to and from Fairview, Allensburgh, Milford, Perintown and Stonelick, all those points being within a short and reasonably convenient distance of stations on one or the other of the defendant lines. On the other hand, under the disposition made of a similar complaint in Cedar Rapids & Iowa City Railway & Light Company vs. C. & N. W. Railway Company, 13 I. C. C. Rep., 250, we are of the opinion that the defendants may properly be required to join with the complainant in opening through routes and establishing joint rates between interstate points and Boston, Monterey, Hartman, Marathon, Quinn's Crossing, Vera Cruz, Fayetteville, St. Martins, Stringtown and Dodsonville. None of these towns is within less than approximately 5 miles and two or three are 10 miles or more by the country roads from any station on the defendant lines. To say that such places are already reasonably well served by either of the defendants is to announce the definite proposition that a wagon haul of from 5 to 10 miles is not an improper burden to put upon an interstate shipper. But in such a view we are not ready to concur as a fixed rule, even when the country roads are so good as the roads in this territory are said to be. While we have little sympathy with, and will not ordinarily lend our aid to, an effort by one road to secure traffic that is reasonably tributary to another road by compelling the latter to join with it in through routes and rates, we shall not permit the theory as to what traffic is tributary to a road to be pushed to such an extreme as to impose an undue burden upon shippers. Confining our ruling to the special facts of the case and to the points last mentioned, we think the prayer for through routes should be granted.

"But, besides contending that the country traversed by the line of the complainant has been adequately served by one defendant for not less than 50 years and by the other for not less than 25 years, the defendants also assert that the combined traffic to and from this territory is very light, and that the little revenue received from it ought not to be taken from them by a line that should never have been built; that, considering the transportation requirements of this district and the facilities offered by the defendants, the complainant's line is one that would not have been allowed to be constructed under a system of laws, prevailing in some of the States, that requires previous official sanction when a railroad enterprise is proposed and a line laid out; and that 'one of the questions involved is whether the owners of a line of railway thus unwisely projected and built can demand a division with the older lines at their expense and without any compensating advantage to the community in general traversed by the several lines.' In this connection the defendants state that no dividends have ever been paid on the outstanding stock of the complainant company, that its line is operated at a heavy annual deficit, and that it is not earning even operating expenses, but is approaching bankruptcy. Figures are also given purporting to show that the freight rates on the lines of the defendant railroads to the territory in this vicinity produce 'not more than 1.3 per cent profit on the investment.' Excluding Hillsboro and Greenfield, the general district has lost both in wealth and population since 1860. It is said, generally speaking, to be an infertile and very poor farming country, not producing enough grain and feed to supply the local demand. And most of the lumber, it seems, has been cleared off.

"The defendants object to through routes and joint rates with the complainant on still other grounds. It is insisted that its right of way is unfit for the operation of such trains as are used on the regular lines. Referring to the matter of ballast, the line of the complainant is said to be a 'one coat' road and without any ballast in some places, while in others the fills have been much washed. We are also told that the bridges in some cases have no sufficient margin of safety and are largely made from material discarded by the regular lines as second-hand stuff, to be sold and not used; that the trestles are subject to the same general criticism; that the grades are steep and the curves sharp; that while operation is possible it is thought to be dangerous; that such freight cars as the complainant has were purchased of the Cincinnati, Hamilton & Dayton Railway from among those condemned as no longer fit for use on that line, and that if put upon either of the defendant lines they would

be 'crushed like eggshells.' Finally it is said that the clearances on the complainant line are not such as are required by the local law of steam roads, although regular line equipment can get through; that for 5 miles the line runs on public streets; and that at Madisonville there are two curves so sharp that freight cars with standard couplers cannot make the turn, shackle bars being required. The right-of-way is from 20 ft. to 60 ft. wide, and at no place on complainant's line are there track scales. It has 9 box cars, 2 flat cars, 4 gondolas and 1 stock car, and is therefore not in a position to exchange any equipment with the defendants or to furnish any equipment for joint use.

"We think that much of this criticism as to the physical condition of the line of the complainant is the reflection of a special view in which the requirements of steam lines with respect to their roadbed and bridges were taken as a basis of comparison. Giving due weight to the testimony of witnesses on each side of the controversy, but basing our conclusions more largely upon our own investigations, we think the complainant will have no difficulty in moving regular line equipment over its road. We do not understand that it is equipped for operating long freight trains. But, whatever may be the facts with respect to all the details of that nature referred to in the record, we assume that the self-interest of the complainant will be sufficient to lead it to make the necessary arrangements so to conduct its operations as to be able to move traffic over its line with safety. This we think it can do, and this we doubt not it will do. We attach no importance, therefore, to the suggestion that the cars of the defendants will not be safe on the line of the complainant, or to the suggestion that if an order is entered requiring the defendants to join in through routes and through rates with the complainant an undue burden will be placed upon them under the so-called Carmack amendment to the act, because of the condition of the complainant's roadbed and bridges.

"In conclusion we find that the complainant is entitled to a switch connection with the line of the defendant the Baltimore & Ohio Southwestern Railroad at Madeira, and to a switch connection at or near Hillsboro with the line of that defendant as well as with the line of the Norfolk & Western Railway. We shall not here specify the exact points at which the connections are to be made. In case, however, the parties cannot promptly reach an agreement on that matter an order will be entered. We also find on the special facts of the case that the record justifies an order requiring the defendants to join with the complainant in establishing through routes so that shippers on the line of the complainant at points between and including Boston on the west and Dodsonville on the east may have access to and from interstate points under through billing and through charges. The suggestion made on the brief of the complainant is that the joint rates, when established, ought not to be greater than the 'maximum consisting of the present tariffs to Hillsboro and Madeira, respectively, and the carload rates upon the complainant's line.' Certainly this demand, as we understand it, is within reason from every point of view. We agree, however, with the defendants in saying that the case does not seem to justify putting them at the expense of reprinting their tariffs and getting the concurrence of their connections in new joint through rates to and from local points on the complainant's line. This may be avoided if the complainant will file its local rates with this commission. This will make them applicable under our rules on through interstate movements.

"As the complaint seems to have been abandoned by the petitioner so far as the Cincinnati, Lebanon & Northern Railway is concerned, we have not considered that line in reaching the conclusions herein expressed.

"On the assumption that the parties will have no difficulty in carrying these findings into effect by agreement among themselves we shall enter no order at this time. Upon being advised of their failure to agree the necessary order will be entered."

MEETING OF COMMITTEE ON SCHEDULES AND TIME-TABLES

The American Electric Railway Transportation & Traffic Association's sub-committee on the construction of interurban schedules and timetables met at Cleveland on Wednesday, April 5. Those present were J. J. Doyle, general superintendent Washington, Baltimore & Annapolis Electric Railway; I. H. McEwen, superintendent Oneida Railway, Utica, N. Y., and H. C. Donecker, secretary of the American Electric Railway Association. Numerous data on the subjects mentioned were collected last year. This material has been worked up in tentative form by the committee, which will make a special study of details, among which are standard meets, adjustment of terminal leaving time, number of trains and miles of tracks operated, time allowed for connections at junction points, branch service, average schedule speed of local and limited trains, number of trains daily and other points that are necessary in the adjustment of standard schedules. Freight train operation, signal equipment and timetable changes were also discussed. The new subjects taken up include different forms of timetables used, methods of showing station names, different standard timetables for single and double track operation, the advisability of indicating different classes of trains, whether schedules should read up and down, best style of timetables for working purposes and for public use, system of numbering trains for Sunday service, the preservation of train numbers by hours regardless of timetable changes, and arrangement of special instructions in timetables. From the timetables filed the committee hopes to develop certain standards for recommendation. Because of the great amount of material on hand a two-day meeting will be held, in all probability on April 20 and 21, to complete the work.

ANNUAL REPORT OF THE BERLIN SYSTEM

The report of the Grosse-Berliner Strassenbahn, Berlin, Germany, for the fiscal year ended Dec. 31, 1910, shows that the company declared a dividend of 8½ per cent on about $25,000,000 capital. During the year it placed in service 100 double-truck motor cars and 24 trailers, giving a total of 675 double-truck motor cars, 917 single-truck motor cars and 1036 trailers. The trail cars seat 24 passengers and carry a platform standing load of 16. The number of passengers carried during 1910 was 427,700,000 as against 396,610,000 in 1909. The gross earnings in 1910 were 40,771,185 marks ($10,192,796) and in 1909, 37,779,274 marks ($9,444,818). The distances run were 97,227,676 car km (60,281,159 car miles) and 91,038,384 car km (55,823,798 car miles). The gross earnings per car kilometer were 42 pfennigs (16.8 cents per car mile) as against 41.5 pfennigs (16.6 cents per car mile) in 1909. The operating expenses formed 55.58 per cent of the gross earnings as against 54.82 per cent in 1909. There were carried 4.4 passengers per car km (7.04 passengers per car mile).

The total number of persons employed was 10,596. Since July 1, 1905, 464 employees have been pensioned, and since Jan. 1, 1907, provision has been made for 100 widows of employees. The income of the sick benefit fund was 565,466 marks ($141,366). The expenses were distributed as follows: Physicians' treatment, 124,575 marks ($31,144); medicines, 79,814 marks ($19,953); sick benefit payments, 296,709 marks ($74,177); funeral expenses, 9033 marks ($2,258); sanatorium and hospital expenses, 57,034 marks ($14,258); miscellaneous, 11,294 marks ($2,823), and management, 11,920 marks ($2,980).

The trackage amounted to 534.5 km (331.4 miles). The sum of 500,000 marks ($125,000) was assigned to the track and roadway depreciation account and 525,000 marks ($131,250) was placed in the depreciation fund for renewal of rolling stock. Under agreement with Berlin and neighboring municipalities the company paid to them 2,786,430 marks ($696,607) from its gross earnings. In addition, Berlin received 1,120,002 marks ($280,000) from the company's net earnings.

COMMUNICATION

COST OF STOPPING AN INTERURBAN CAR

New York, March 10, 1911.

To the Editors:

In an article entitled "Automatic Block Signals for Electric Railways," which was printed in the Electric Railway Journal of Feb. 11, 1911, W. K. Howe says:

"Based on information furnished by an official of one of the large interurban lines of the country it was found that the cost to stop and start an ordinary 40-ton car running at 40 m.p.h., including power wear and tear on brakeshoes, brake rigging and trucks, is approximately 3 cents per stop, based on a cost of 1¼ cents per kw-hour."

Mr. Howe's estimate of 3 cents per stop is certainly conservative, as will be seen from the following calculation of the electrical energy required to start a 40-ton car from rest and attain a speed of 40 m.p.h.

The potential energy of a 40-ton car moving at a speed of 40 m.p.h. is

$$\frac{40 \times 2000 \times 40^2 \times 1.467^2}{2 \times 32.2} = 4{,}270{,}000 \text{ ft. lb.}$$

When the car is in motion all that energy will have to be dissipated before the car can be brought to a standstill, but it will not be necessary to employ an equal amount of outside energy in order to overcome it, for the greater part will be dissipated in track, journal and wind resistance. In the case of a car at rest, however, the full amount of energy will have to be supplied from the outside in order to attain a speed of 40 m.p.h.

The amount of electrical energy necessary to put into the motors in order to produce the specified amount of potential energy will be considerably greater, however, for the reason that a large part of the energy will be wasted in heating the motors and in overcoming rheostatic and other losses and the inertia of rotating parts. In any given case where the condition of line and equipment is known these losses can be obtained and the power input accurately figured. In general it will be found that the average accelerating efficiency of a railroad motor is about 82.5 per cent and that the inertia of the rotating parts is equivalent to about 10 per cent of the total weight of the car.

According to these assumptions, we have:

$$\text{Input} = \frac{4{,}270{,}000 \times 1.1}{2{,}655{,}000 \times 0.825} = 2.15 \text{ kw-hours,}$$

which, at 1.25 cents per kw-hour at the third rail, amounts to 2.68 cents.

It will be seen then that the power consumed in starting alone is very nearly 3 cents. If to this be added the power consumption due to braking and the increased wear and tear of roadway and equipment due to both the total cost of a stop will be much higher, probably not below 5 cents, or 0.125 cent per ton.

As stated above, the power consumption due to starting and stopping a train can in any given case be calculated to the desired amount of precision, but the additional wear and tear of the roadway and equipment due to acceleration and braking and the wear of brakeshoes and brake rigging due to stopping is more a matter of opinion than of mathematical computations, and it would be interesting as well as instructive to have the opinion of practical railroad men on this matter, for the problem is becoming more and more important as the street and suburban railroads are progressing. The problem may have an important bearing in deciding upon the proximity of stations, the advisability of introducing express service, the amount to be spent on eliminating curves and grade crossings and the maximum speed to be employed.

In the New York Subway about 1,800,000 car trips per year are made over four tracks. The average weight of a loaded car is about 42 tons, but the maximum speed is somewhat below 40 m.p.h. Since each car stops and starts twice at each stopping point during a round trip, the annual cost of a stopping point—even at the low figure that Mr. Howe assumes—would be:

$$1{,}800{,}000 \times 2 \times 0.03 = \$108{,}000,$$

which is equivalent to a capitalization of $2,160,000.

P. Sachs.

ENTRIES FOR ST. LOUIS FENDER TESTS

The following is a list of the entries of fenders and wheelguards for the tests to be conducted by the Board of Public Improvements, St. Louis. The conditions under which these tests will be conducted were published in the issue of this paper for March 18:

April 10-11. Benj. L. Ingram, Mount Vernon, Ill.
" 12-13. Seeley Automatic Wheelguard, New York.
" 14-15. Albert Doss, St. Louis.
" 17-18. Parmenter Fender & Wheelguard Company, Boston.
" 19-20. Wonham, Sanger & Bates, New York.
" 21-22. Electric Traction Supply Company, St. Louis.
" 24. A. J. Berg, Chicago.
" 25-26. John T. Hodgins, St. Louis.
" 27-28. J. H. Davis, St. Louis.
April 29-May 1. H. W. Bodendieck, Harvel, Ill.
May 2-3. R. S. Mills, St. Louis.
" 4-5. John M. Gomes, St. Louis.
" 6-8-9. Eclipse Railway Supply Company, Cleveland.
" 10-11. Jasper Blackburn, St. Louis.
" 12-13. A, Petrequin, East St. Louis.
" 15-16. Ira P. Clark, Decatur, Ill.
" 17-18. J. H. Surtin, St. Louis.

TROLLEY WIRE SPLICER

The Westinghouse Electric & Manufacturing Company has placed on the market a 20-in. trolley-wire splicer known as the "Cleveland" type. A feature of the splicer is the method of securing the wire, by the use of a tapered and slotted chuck fitting snugly around the wire. The chuck is threaded on the

Trolley Wire Splicer

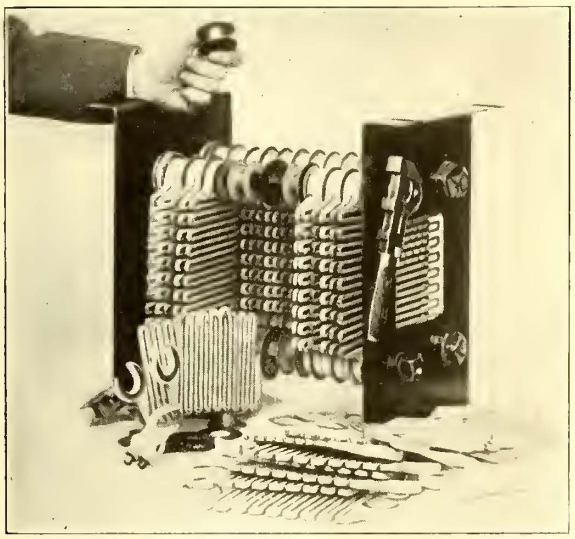
inside, and when inserted in the tapered hole in the splicer firmly grips the wire. The greater the tension on the wire the firmer the grip becomes, and it is impossible to pull the wire out of the splicer. The chuck is easily removed, however, when it is desired to take up slack wire. The boss is detachable so that it can be removed if suspension is not required. The approaches are so proportioned that smooth underrunning is obtained.

REVISION OF NATIONAL ELECTRICAL CODE

At a meeting of the electrical committee of the Underwriters National Electric Association, held in New York, March 22 and 23, a number of changes were made in the Underwriters' code of installation rules, but no changes were made in those rules affecting the wiring of cars and carhouses. New specifications for rubber-covered wire were approved, but they probably will not become operative for a year in order to allow manufacturers and dealers to dispose of their stocoks of wire made under the old specifications. The American Electric Railway Engineering Association was represented at the meeting of the committee by Norman Litchfield, secretary.

REMOVABLE GRID RHEOSTATS

Ease in repairing is one of the strong features of the RG rheostats recently placed on the market by the General Electric Company. In the ordinary forms the grids are strung on the supporting tie rods like beads on a string and the replacement of one or more injured grids necessitates the unmounting of the whole rheostat and the removal of practically all the other grids. In the RG rheostats this trouble is avoided by slotting



Method of Carrying and Removing Grids

the supporting bosses at the top and bottom of the grids so that each grid can be slipped on or off the tie rods without disturbing any of the others. This valuable feature has been obtained without sacrificing any other essential qualities. The grids are of the best grade cast iron and are coated with a compound to prevent rusting. By arranging them in two sections several decided advantages are obtained over the usual single section type. For instance: The potential between any two grids on the same tie rod is cut down to one-half of what it would be in the latter case, while shorter convolutions of larger cross-section give more rigid grids which are less liable to breakage and short-circuit. Furthermore, the design of the grid supports not only permits the secure mounting of the grids, but also effectually protects their insulation. This is accomplished by incasing the tie rods in mica insulating tubes over which are placed a series of metallic spools. In mounting the grids the slotted bosses are slipped over the spools, and, therefore, do not abrade the mica tubes inside. The inclination of the slots prevents the grids from falling out after being slipped into position. All that is necessary to secure the grids firmly in position is to tighten the nuts on the ends of the tie rods. The taps or connections are made by means of separate detachable terminals, which may be inserted between any two grids to provide the proper resistance at each step of the controller. Each terminal is equipped with two sets of screws for fastening the leads and preventing them from working loose under shock and vibration.

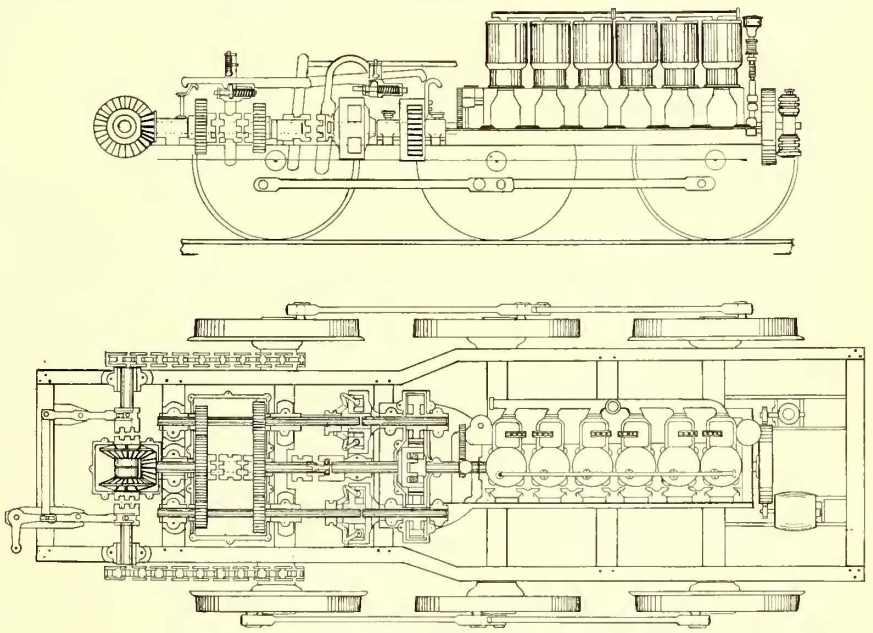
The frame end pieces are of pressed steel to give the minimum weight with maximum strength. The use of these rheostats should greatly reduce the delays due to break-downs since a few extra grids and a wrench carried on the car will provide immediate relief. The only work required is to loosen the nuts on the ends of the tie rods, remove the injured grid, slip in a new grid and then retighten the nuts.

DIRECT DRIVE GASOLINE CAR

The accompanying engraving shows a transmission and control system for gasoline motor cars recently patented by Louis B. May, New York. The engine is of the marine six-cylinder type and drives the central shaft of the three shafts shown in the plan. This shaft is in two parts, which are in engagement only on direct drive and for full speed of the car. The engine is started by compressed air. The two jackshafts are then thrown into engagement with the engine shaft by means of internal expansion clutches which are operated by the movement of the master lever. Further movement of this lever throws into engagement the first-speed gears, which up to that time had been running free, then throws in the second-speed gears, the power in each case being transmitted from engine around main shaft and through the gears on jackshafts which are continually in mesh. Finally, when the master lever is thrown into direct drive, the dog clutch between first and second-speed gears and the friction clutches on the jackshafts automatically disengage, so that the power is transmitted directly through the main shaft to the pinion and main gears on the cross shaft, shown in the plan. When the power is shut off by disconnecting the main shaft, the dog clutch immediately engages with the low-speed gear so that the mechanism is ready to start again. All these movements are secured by one movement of the lever in a forward or rear direction.

In the car shown the engine will deliver 150 brake hp at 600 r.p.m., which, with 36-in. drivers, corresponds to a car speed of 36 m.p.h., but the engine will speed up to 700 r.p.m., a speed corresponding to a car speed of 42 m.p.h.

The truck shown is designed for locomotive use, as the inventor believes in separating the power from the passenger car and using the latter as a trailer. The trailer may be lighted by electricity, equipped with air brakes and heated by hot water from the engine. All gears are incased and run in oil and the bearings on main driver are of the "rollway" type. The motor car weighs about 15 tons and will pull standard freight cars on the road.

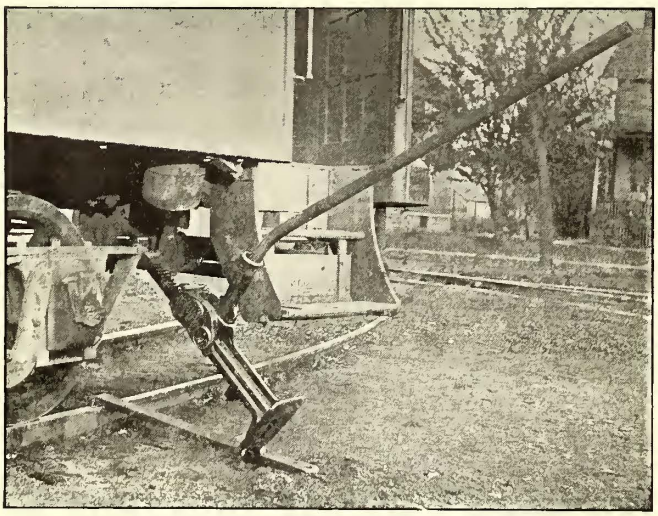


Side Elevation and Plan of Direct Drive Gasoline Car

The Durham (N. C.) Traction Company has contracted with the B. M. Rollins Company, Kankakee, Ill., to install a No. 3 coaster at its park at Durham for use by May 1, 1911.

APPLYING A JACK AT AN ANGLE

The accompanying illustration shows a Barrett wrecking jack used in connection with a jack hook which is hooked over the rail. The foot of the jack rests against a bolt which is run through the hook to permit the jack to be held at the desired angle. Thus the head of the jack bears against the truck frame so that the entire car can be lifted and swerved over in the direction intended. This hook attachment was devised by an electric railway shopman who has found it very serviceable in handling cars.



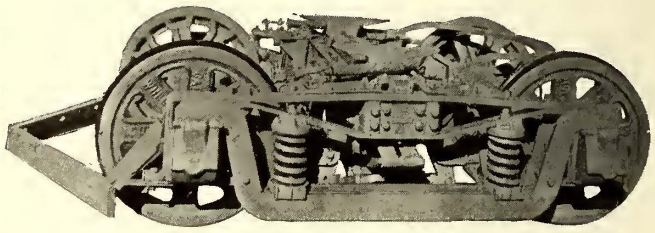
Wrecking Jack Applied at an Angle

SEMI-STEEL PAY-AS-YOU-ENTER ROLLING STOCK FOR MILWAUKEE

The St. Louis Car Company has shipped 50 cars recently to the Milwaukee Electric Railway & Light Company and the rest of the order for 100 is being rapidly completed. As shown in one of the accompanying views, these cars are of the double end and pay-as-you-enter type, they are handsome in appearance and embrace some very practical features. The main dimensions are 35 ft. over the corner posts, 49 ft. 6 in. over the vestibules, 50 ft. over the buffers, 8 ft. 7 in. over the widest part, 8 ft. 6¼ in. over the belt rail.

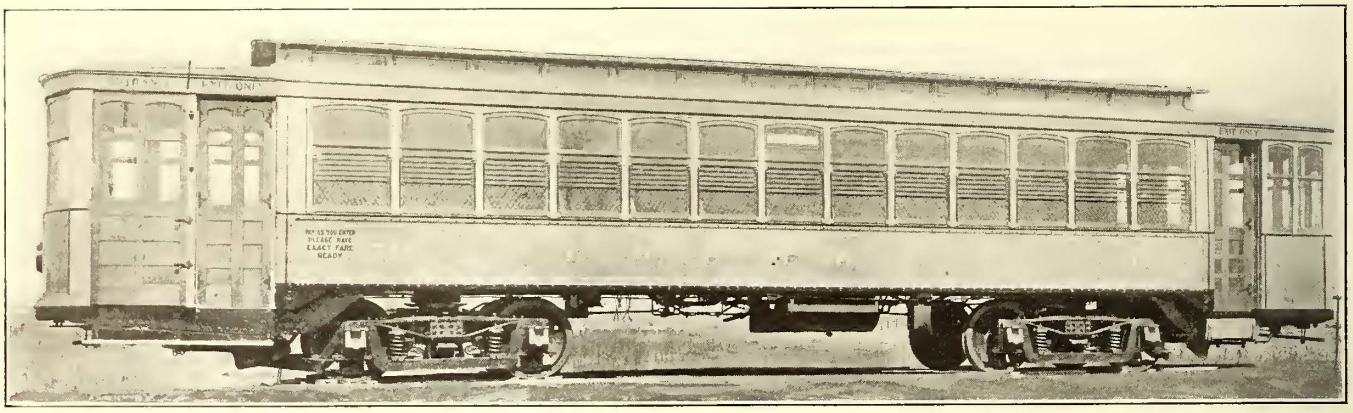
The construction is of the "semi-steel" type, as the side of the car below the window sill forms a girder in connection with the side sill and the bottom frame. The girder plate is of steel 28 in. x 3/16 in. for the full length of the car with inside and outside bevel edge 2¼-in. x ⅜-in. plate for the tension member and a 4-in. x 4-in. x ½-in. "T" on inside and a 2¼-in. x ⅜-in. bevel plate on the outside for the bottom or compression member. The "T" on the inside forms the side sill. The cross sills are of the truss type with a 4-in. special channel laid flat on top over the flooring sheet, which is No. 14 steel. This construction allows the 4-in. channel center sills to run in one length from end sill to end sill and to support the latter on malleable iron strut castings. A 4-in. x ½-in. plate is provided for the tension member of the truss. The end sill is a 10-in. channel to which the side girder and center sills are rigidly connected. The bolsters are truss type steel plate filled with malleable iron. The trap doors are of steel plate and filled with the flooring composition. This flooring composition is Karbolith. It is held to the floor sheet by angle clips.

The platforms are of the drop type supported in the center by two 4-in. x ½-in. plate knees bent into shape and connected to the car floor center sill channels and bolted to the wood sills 2¼-in. x 4-in. for floor support. The side knees are of built-up construction and consist of 3/16-in. plate with 2-in. x 2-in. x ¼-in. angles riveted to the top and bottom to form a double cross.



Truck for Milwaukee Pay-as-You-Enter Car

Each end of the car is fitted with two doors sliding by each other in a pocket. The vestibules are of the pay-as-you-enter type with the necessary rails spacing entrances and exits. The exit doors are opened outward and are double to give a clear opening of 23 in. The doors at the motorman's right hand and at diagonally opposite ends of car are operated mechanically by the motorman in connection with folding steps. The doors at motorman's left hand and at diagonally opposite ends of car are operated mechanically by the conductor. The entrance doors at the platform are double folding and are arranged to fold against the front of vestibule. The vestibule side which is opposite the entrance doors has two windows.



Latest Design of Closed Vestibule Type Pay-as-You Enter Car of Semi-Steel Construction for the Milwaukee Electric Railway & Light Company

The cars are equipped with the car builder's latest type of reversible seats covered in rattan. The seating capacity is 52. The inside finish of the car consists of quarter-sawed oak of neat and sanitary design. The car bodies are mounted on Milwaukee special type M. C. B. trucks made by the St. Louis Car Company and shown in one of the accompanying illustrations. The cars are equipped with four GE-216 motors and National air brakes. All of these cars are being constructed under license of the Pay-As-You-Enter Car Corporation.

News of Electric Railways

Program of Meeting of the Iowa Street & Interurban Railway Association

The annual convention of the Iowa Street & Interurban Railway Association will be held at Davenport, Ia., on April 20, 21 and 22, 1911, coincident with the meeting of the Iowa Electrical Association. The sessions of both associations will be held at the Coliseum. In connection with the conventions there will be an exhibit of electrical apparatus. The following papers will be read at the sessions of the Iowa Street & Interurban Railway Association:

Paper, "The Use of Wood Preservatives—Is the Expense Justified by the Results Obtained?" by C. W. Rhodes, St. Louis, Mo.

Paper, "Legislation—The Detrimental Effect of Useless Legislation on Utility Corporations and the Communities Which They Serve," is still to be assigned.

Paper, "Things Worth While in Shop Practice," by Jacob W. Gerke, master mechanic of the Tri-City Railway, Davenport, Ia.

Paper, "Development of the Auxiliary Load for Railway Power Plants," by J. C. Young, contracting agent of the Cedar Rapids & Iowa City Railway & Light Company, Cedar Rapids, Ia.

Paper, "Effective Methods of Handling Snowstorms," by Frank S. Cummings, traffic manager and chief engineer of the Inter-Urban Railway, Des Moines, Ia.

Paper, "Steel or Steel-Tired Wheels vs. Cast Iron," by a representative of the engineering department of the Carnegie Steel Company.

Excellent entertainment features have been arranged. The supply men will give a smoker at which both professional and amateur talent will appear, and a theater party will be given by the Tri-City Railway. There will also be a rejuvenation of the Sons of Jove. To carry out the program of this society J. F. Dostal will attend from Denver and Mr. Strickland and W. N. Keiser, Dubuque, Ia., will be present. Both the Iowa Street & Interurban Railway Association and the Iowa Electrical Association have extended invitations to the officers of public utilities in Illinois to attend, and many from that State are expected.

Annual Convention of the Southwestern Electrical & Gas Association

The seventh annual convention of the Southwestern Electrical & Gas Association will be held in Houston, Tex., on April 27, 28 and 29, 1911. The headquarters of the association will be in the Municipal Auditorium, where the meetings will be held. It is suggested that applications for hotel reservations should be made direct to the hotel at which the attendant at the convention desires to stop. The executive committee has adopted a standard badge for the association, with the idea that this badge will remain a permanent one. All members and member companies will be entitled to badges free of charge. Extra badges will cost 50 cents each. Advance copies of the "Question Box" and the souvenir program will be distributed from the office of the registrar on the first day of the convention. The following tentative program of papers has been prepared:

"Industrial Development of Fuel Gas," by R. L. Soper, secretary of the Dallas (Tex.) Gas Company.

"Investigation and Care of Return Currents," by George H. Clifford, general manager of the Northern Texas Traction Company, Fort Worth, Tex.

"Boiler Economy and the Application of Flue Gas Analysis," by M. L. Hibbard, engineer of the San Antonio Gas & Electric Company, San Antonio, Tex.

"Cause and Prevention of Accidents," by C. W. Kellogg, Jr., manager of the Texas securities department of Stone & Webster, Dallas, Tex.

"Light-Weight Cars, Their Construction and Operation," by R. T. Sullivan, general superintendent of the Houston (Tex.) Electric Company.

"Steam Consumption in Water-Gas Plant," by L. B. Moorhouse, superintendent of the gas department of the San Antonio Gas & Electric Company, San Antonio, Tex.

"Development of Electric Power Business," by P. A. Rogers, commercial agent of the Dallas Electric Light & Power Company, Dallas, Tex.

"Practical Tests for Railway Equipment," by H. Fink, Jr., mechanical engineer of the San Antonio (Tex.) Traction Company.

"Naphthalene," by W. H. Riblet, superintendent of manufacturing of the Houston (Tex.) Gas Company.

Discussion: Street railway, electric and gas sections of the "Question Box."

The following entertainment program has been arranged:

April 27

2:00 p. m.—Opening of the electrical show.

4:00 p. m.—Reception for visiting ladies at the Houston Country Club.

8:00 p. m.—Reception by "supply men" and exhibitors to visiting members and ladies at the electrical show in the auditorium.

April 28

11:00 a. m.—Electrical show opens for the day.

8:00 p. m.—Rejuvenation of the "Sons of Jove."

April 29

10:00 a. m. to 3:00 p. m.—Boat trip on the Buffalo Bayou to the San Jacinto Battlefield.

8:00 p. m.—Reception at the electrical show.

April 30

10:00 a. m.—Trip to the City of Galveston and the new causeway on the new Galveston-Houston Interurban.

It is proposed to hold an electrical exhibition in the Municipal Auditorium at Houston in connection with the convention, and this feature is in charge of a committee appointed from the active and associate members residing in Houston. No admission charge will be made, and it is intended to advertise the electrical show in the cities near Houston. Those who desire space at the show are requested to communicate with M. B. Wheeler, 602 Preston Boulevard, Houston, Tex.

It is suggested that those who propose to attend the convention should communicate with D. G. Fisher, 1316 Commerce Street, Dallas, Tex.; Sam A. Hobson, manager of the Fort Wayne Electrical Works, St. Louis, Mo., or Milton Mill, 915 Olive Street, St. Louis, Mo., for information in regard to transportation facilities or sleeping car reservations.

Minneapolis Company to Contend Right of City to Order Extensions and Regulate Service

The Twin City Rapid Transit Company, which controls the Minneapolis Street Railway, has decided to contest the right of the City of Minneapolis to order extensions and to prescribe regulatory rules of service and has brought suit in the United States District Court at Minneapolis to restrain the city from enforcing the provision of the ordinance of March 10, 1911, ordering new lines and extensions and the ordinance of Feb. 10, 1911, known as the "strap hangers' ordinance," penalizing the company for admitting into street cars more passengers than one and one-half the number for which seats are provided. In its application for a restraining order the company asserts that action in the courts is the only way in which the property of the company and the stockholders can be protected and that the city ordinance for extensions and new lines and the order prescribing service rules are unreasonable.

W. J. Hield, vice-president and general manager of the company, has explained the action of the company in carrying the matter to the courts as follows:

"The orders of the City Council covering new lines and service requirements on these as well as on existing lines have been given the most careful study and consideration, and in applying to the court for relief it was after reaching the conclusion that in this way only could the property and the rights of the stockholders be protected.

"Section 3 of the service ordinance reads as follows:

"'That whenever any passenger shall be admitted into

any of said cars in excess of the carrying capacity thereof, as in this ordinance defined, said Minneapolis Street Railway shall forfeit and pay to the City of Minneapolis the sum of fifty (50) dollars for each and every passenger so admitted, said amount to be recovered in a civil action by said city in the municipal court thereof unless payment thereof be voluntarily made within five days after demand therefor by the city attorney. Provided that such payment shall not be required in any case wherein another car on the same line, proceeding on the same track and in the same direction and containing fewer passengers than the carryinng capacity thereof, shall at the time be within 300 ft. of the point where said excess passenger is admitted.'

"From the standpoint of practical operation compliance with this order seems unreasonable. Conditions frequently arise which make it impossible for us to have cars of the same line within a distance of 300 ft. of each other and this would appear to be necessary if we are to escape the penalties of the ordinance.

"In the matter of new lines and extensions it seems to us that the contract between the city and our company is clear and, while the Council has put a time limit for test purposes on about nine miles of line, it is the declared intention of that body to follow this with similar orders covering in the aggregate more than 40 miles of trackage, all of which has already been ordered and is now of record in the office of the city clerk. This would increase our total mileage by approximately 25 per cent, with little, if any, increase in revenue. The question as to the rights of the company is one which must sooner or later be met and this question could be determined in the shortest time by application to the Federal Court."

In the ELECTRIC RAILWAY JOURNAL of Feb. 18, 1911, page 311, the statement was published which Mr. Hield made in regard to the opinion filed with the city clerk by Judge Daniel Fish, city attorney of Minneapolis, who held that the city had power to order and enforce the construction of new lines and to regulate street railway service.

Conferences of Cleveland Chamber of Commerce Concluded

Throughout the investigation of the needs of the Cleveland Railway by the special committee of the Cleveland Chamber of Commerce the officials have emphasized the point that some plan should be adopted that will maintain the value of the stock at 100 cents on the dollar to the end of the grant so as to attract investors and protect owners of stock in case the city takes over the property or names a purchaser for it.

The sub-committee of the special committee has gone over points of disagreement with Street Railway Commissioner Dahl. Its report indicates that Mr. Dahl and the company agree upon the idea of removing from the grant the sections which require the company to dispose of its property at an appraised value and 10 per cent additional at the end of the grant, if the city decides to purchase or name a purchaser. This, the committee believes, would obviate the necessity of amortizing franchise and paving values and would overcome the objections to the provisions requiring that improvements and extensions be maintained at 70 per cent of the reproduction value.

Mr. Dahl also proposed a plan to build up a general surplus, effective only after the expiration of the 10-year period in case the city does not renew the grant at that time. He believes this would make unnecessary the establishment of a reserve at this time and would allow the fare to remain unchanged. Mr. Dahl also insists that the city shall have the right to initiate improvements and extensions. The company wants the right limited to the first 10 years so that it will always have the opportunity to make up for expenditures during the last 15 years of the life of the franchise. In case the franchise is renewed, as anticipated, every 10 years the city would continue to have the right demanded. The commissioner objects to a change in the maximum rate of fare, but wants the suburban towns to enjoy all the rights as to fare that the city has, except when the life of the franchise becomes less than 15 years. The company does not object to this. City Solicitor Baker asked that the grant be changed so that the city might name a purchaser at any time at par, without agreeing to operate at a lower rate of fare. Both Commissioner Dahl and the company objected to this.

At the regular meeting of the committee on the afternoon of March 28, 1911, Chairman F. H. Goff questioned Commissioner Dahl as to whether there had been waste in the management or operation and received a negative reply. He did make this statement, however: "The plan will fail under this ordinance or under the ordinance as framed with the changes unless the disposition of the operators makes no difference in the success." He said that the condition of the maintenance and operating funds is now such as to make arbitration imminent.

City Solicitor Baker objected to allowing the street railway commissioner to have final power to deal with the company on so many points. He had profound confidence in the present street railway commissioner, but a man might be placed in the office who would not have the same pride in handling the business that the present commissioner has. The Mayor or the City Council should be a court of last resort in matters which he mentioned. Mr. Dahl pointed out that the commissioner is appointed by the Mayor and may be dismissed by him.

At a meeting of the committee on March 30, probably the last one, Mr. Dahl, in support of his contention that $2,500,000 of bonds should be sold at once after the passage of amendments, read a letter from Judge Tayler, written 10 days before his death, bearing upon the sale of bonds. It follows in part:

"In the case of the Cleveland Railway there is not the slightest reason why it should not obtain all the money that can reasonably be needed and invest it in equipment or other improvements which the public traffic demands. The fallacy of the position taken by the Cleveland Railway is that no money ought to be raised except by selling stock, and as the ordinance does not permit the stock to be sold at less than par, therefore, they say, 'We can raise no money.'

"I have always contended that it was unsound as well as extravagant to undertake to raise money by selling stock. The stock of the Cleveland Railway is an irreducible debt drawing 6 per cent per annum and, since that burden can never be reduced, it ought never to be increased.

"The bonded indebtedness of the Cleveland Railway is very low, only about 33 1-3 per cent of its value. The money necessary for improvements ought to be raised by the sale of bonds. This is a reducible debt if there is any necessity for reducing it. At all events if 6 per cent had to be paid on bonds now 5 per cent or 4 per cent might be all that would be necessary to pay upon them in a few years from now."

The deliberations of the committee will be held in private and its report will be made to the full body of the Chamber of Commerce. If approved the recommendations of the committee will then be made to the city administration. Any changes in the grant will be submitted to a referendum vote.

Report of Commission on Proposed Settlement Ordinance in St. Louis

The Public Service Commission of St. Louis made a report on Feb. 24 expressing the opinion that, in view of the following conclusions, the proposed settlement ordinance of the United Railways Company, an abstract of which was published in the issue of the ELECTRIC RAILWAY JOURNAL for March 18, 1911, page 471, should not be passed:

"The payments proposed to be hereafter made in lieu of the mill-tax and the franchise taxes are fixed arbitrarily without consideration or regard to the adequacy or reasonableness of the amounts of such payments.

"It does not properly provide for adequate service either now or hereafter.

"It grants valuable rights without proper safeguards.

"It would barter away important rights to regulate the service for 37 years to come."

The commission declared that it would be better to postpone action until the completion of the investigation of the affairs of the company on which it is now engaged, saying:

"The commission will then know the amount of invest-

ment of the company upon which it is entitled to earn a return, the amount of its gross earnings, the amount properly to be deducted therefrom for operating expenses, depreciation fund, return on investment, etc., and thus be able to advise whether a proposed license tax or franchise tax would be reasonable or not."

The commission says in part:

"We would suggest as matters worthy of consideration in this connection that the street railway companies in Chicago are now operating under a franchise whereby the city receives 55 per cent of the revenue of the company after the payment of operating expenses and certain fixed charges. In Cleveland the street railway companies operate under a grant whereby the rate of fare varies with the net earnings of the company, the fare decreasing as the business of the company increases, and thus the people in this instance share directly and immediately with the company the excess of earnings over a fair return to the company.

"The commission further suggests that, inasmuch as there is a possibility of the construction of a subway in the city during the term of the proposed franchise, provision should be made for the temporary removal or change of such tracks of the company as might interfere with the construction of such subway.

"One of the principal claims to consideration advanced by the advocates of the bill is that the street railway service in the City of St. Louis will be greatly improved as the result of its passage. The commission fails to see where this object will to any appreciable extent be secured or assured under the bill.

"Inasmuch as the city has the power to regulate the company in the performance of its duties to the public and to punish the company for failure to perform its duty, it is incomprehensible that a tribunal created to pass upon the derelictions of the company, in which the company is to be judged, has equal voice with the city in determining the guilt of the company. We do not see any reason why the company should have any representation on such tribunal created especially to judge it. The guilt or innocence of the company is a question not for arbitration, but for determination by the city, either in the police court, where other violations of ordinances are tried, or in such other tribunal as the city may designate.

"There is also provision in the ordinance for the construction in the near future of certain new tracks. These provisions are somewhat loosely drawn. At any rate, the building and operation of this track would be a comparatively small factor in the solution of our transportation problem. The question of adequate transportation in St. Louis, while depending partly on installation of track, is largely a question of more cars and more frequent or better arranged trips. In short, it is a question of having more money spent on the service.

"Section 1 seems to make doubtful the issuance of a transfer on a transfer, or more than one transfer for one cash fare, as it forbids the issuance of a transfer to any one except a passenger who has paid a cash fare, whereas even now in certain instances transfers are issued by the conductor to a passenger who gives him not a cash fare, but a transfer from another line.

"We recommend that the improper or dishonest use of transfers should be punished, but question whether a maximum fine of $100 is not excessive for this offense, which involves the dishonest use of a transfer valued at less than 5 cents."

Armistice in Detroit

At a meeting of the franchise committee of the Common Council of Detroit, Mich., on March 29, 1911, the proposal of the Detroit United Railway to better and extend its lines was approved, and the city will not demand an increase in rentals until 1915, when several other franchises expire. On Feb. 6, 1911, Mayor Thompson asked J. C. Hutchins, president of the company, if some plan could not be developed to improve the service. Two days later Mr. Hutchins stated that the company would do everything possible to carry out the Mayor's wishes. It was finally arranged that certain improvements should be made under a special permit that should in no way be construed as a franchise or an extension or renewal. A tacit understanding was reached, however, that no increase should be made in the rentals for operating over streets where franchises have expired until further and more important grants expire in 1915.

The improvements will consist in double-tracking Mack Avenue from Baldwin Avenue to the easterly city limits, double-tracking the Chene Street line north of Gratiot by building tracks on Grandy Avenue, constructing a double track on Hamilton Boulevard from Holden Road to the northerly city limits and transforming the Brush line and Beaubieng line into a loop by the construction of a connecting line. The City Council adopted a resolution on May 3, 1910, giving the company the permission to do this work.

The company is now paying the city $300 a day to operate over routes where franchises have expired and suit has been brought to increase this to $500. This suit will take its course in the courts. The company will also continue its fight for a decision that the per diem payment is in lieu of all other city taxes. In all, the improvements and extensions comprise about eight miles of track. In addition the company had planned to spend about $600,000 for new cars, additional power and other improvements. The franchise committee has instructed Corporation Counsel Hally to prepare a resolution embodying the permit for the construction work and the matter will be brought before the Common Council at its next meeting. The Detroit United Railway and the Detroit, Jackson & Chicago Railway plan to purchase a new right-of-way out Michigan Avenue to the Washtenaw County line so that the public roadway may be broadened. The County Commissioners are aiding in the purchase of the right-of-way from farmers.

Proposed Railway in Bermuda.—Maxwell Greene, Hamilton, Bermuda, reports that the case of the Bermuda Electric Company was laid over by the Colonial Parliament for six months or until a new Parliament shall be elected and convened. The company plans to build an electric railway on a right-of-way along the highways, to connect St. George, at the eastern end of the island, with Somerset and Ireland Island, at the western end, with loops in the City of Hamilton and its vicinity. A Canadian company is to finance the work.

Columbus Dynamiter Convicted.—Alfred N. Strader, charged with dynamiting the South High Street carhouses of the Columbus Railway & Light Company, Columbus, Ohio, during the strike last summer, was found guilty on March 31, 1911. The minimum penalty is 10 years in the penitentiary. A motion for a new trial has been filed. Hugh Cavanaugh, convicted of placing dynamite on the Westerville car tracks during the strike, was sentenced to serve 10 years in the penitentiary by Judge C. M. Rogers, on March 27, 1911.

San Francisco's Municipal Railway.—The issue of $600,000 of 4½ per cent municipal bonds, recommended to be issued by the public utilities committee of the San Francisco Board of Supervisors for the reconstruction of the Geary Street, Park & Ocean Railroad as a municipal enterprise, was offered for subscription on March 20, 1911, but only $93,000 of the bonds were disposed of at par and interest as follows: $25,000 to the Mutual Savings Bank of San Francisco, $10,000 to the First Federal Trust Company, $2,000 to John Callahan, $1,000 to Ralman Seidl, $25,000 to John McGahey, $25,000 to William Caesar and $5,000 to Charles Fisher. It is announced that the remaining $507,000 will be sold "over the counter" at par. The bonds mature at the rate of $35,000 yearly on July 1 from 1915 to 1934, inclusive.

Franchise Negotiations in Toledo.—At a meeting of the committee of the whole of the City Council of Toledo, Ohio, March 31, 1911, Mayor Brand Whitlock was selected to represent the city in the negotiations with the Toledo Railways & Light Company, and April 4 was selected as the date for the first meeting. Albion E. Lang, president of the company, and counsel will represent the company. Opinion at the meeting of the Council was divided in regard to the question of leaving the rate of fare in the tentative ordinance as drawn by City Solicitor Schreiber. The Mayor said some time ago that the administration would agree to leave this matter to the last for consideration, but some members of the Council favor the plan to leave in the Schreiber ordinance

the clause demanding a fare of 3 cents. It is uncertain whether the Schreiber draft will be used as a basis for the negotiations. Mayor Whitlock explained that the tentative franchise was in the nature of memoranda.

LEGISLATION AFFECTING ELECTRIC RAILWAYS

MASSACHUSETTS

The bill to give the Railroad Commission power to employ men to prevent the crowding of cars on subway and suburban railways has been ordered to a third reading in the House. The bill to place the ventilation of electric cars under the regulation of the district police has been referred to the next Legislature. The bill to give boards of aldermen or selectmen power to revoke the franchises of street railways which do not fulfil agreements has been reported with leave to withdraw by the committee on street railways. The committee on metropolitan affairs has reported no legislation necessary on the report of the joint commission on metropolitan improvements upon steam railroad electrification within the Boston district. A number of bills providing for the electrification of railroads are pending at the present session, but the indication is that the whole electrification situation will be determined largely by the attitude of the Legislature upon the bill to authorize the New York, New Haven & Hartford Railroad to purchase the Boston, Revere Beach & Lynn Railroad and build a tunnel for electrified service under Boston Harbor. If the latter bill passes it will mean the beginning of electrification at Boston, with the likelihood of extensions to many suburban points within the near future, so far as the New Haven lines are concerned.

NEW JERSEY

The Edge employers' liability bill, which was passed by the Senate, as noted in the Electric Railway Journal of March 25, 1911, was passed by the Assembly on April 3 and has been signed by Governor Wilson. This is the first of the reform measures urged by the Governor which has been enacted. The Egan public utility bill to create a new commission, which was passed by the House on March 4, was killed in the Senate on March 22. Finally the committee of the Senate which is considering the public utility measures caused a substitute measure to be drafted and this was passed by the Senate by a vote of 16 to 1 on April 4. The new measure replaces Senate bills Nos. 5, 14, 19 and 30. It doubles the appropriation of the commission, making the sum at its disposal $100,000, confers rate-making powers on the commission and provides that no commissioner shall hold any official position or own any of the securities of the companies which come under the supervision of the commission.

NEW YORK

After the deadlock in regard to the election of a Senator to succeed Chauncey M Depew was broken on March 31, 1911, by the election of James A. O'Gorman, the Legislature adjourned until April 17, 1911, so as to permit repairs to the Capitol necessitated by the recent fire. A bill to subsidize electric railways has been introduced by Assemblyman Lansing, of Rensselaer. The bill provides for using the funds of the State Highway Commission to build electric or steam roads for the benefit of towns. Upon the petition of 51 per cent of the taxpayers of any town the supervisors are empowered to investigate and report to the Public Service Commission their recommendation on the petition. If the report is favorable and the Public Service Commission grants a certificate of necessity the State Highway Commission is to supervise the construction of the road, 50 per cent of the cost to be paid from the funds of the State Highway Commission, 35 per cent by the county and 15 per cent by the town in which the road is situated. The title of the bill says it is an act to provide for highways to be known and designated as street-surface railways.

A bill similar to that introduced recently in the Senate by Senator Thomas C. Harden, which makes it mandatory on the part of the Public Service Commission and the Board of Estimate to include an Eastern District spur in the proposed comprehensive subway system, has been introduced in the House. A bill has been introduced to extend for three years beyond the time now fixed in the railroad law the time within which a domestic railroad in existence on March 1, 1911, may begin the construction of its road. A similar extension is also given to any such railroad corporation in the time fixed for the completion of its road. Assemblyman Fry has introduced a bill in the Assembly to amend the Greater New York charter in relation to granting franchises to railroads in the city of New York so that the Board of Estimate and Apportionment shall be required, in granting a franchise to any railroad in New York City, to stipulate a 5-cent carfare for a continuous ride for each person, with transfers good at all crossings and intersecting points of the same company without further charge. At the hearing before the Senate Railroad Committee on Senator Wainwright's bill to limit the rate of fare on the New York, New Haven & Hartford Railroad from New York to points in Westchester county to the basis between Boston and points within a radius of 25 miles of that city, the company opposed the bill on the ground that it would mean severe loss in revenue. Assemblyman Egan has introduced a bill to require the Manhattan (Elevated) Railway within three years to extend its line along a prescribed route.

PENNSYLVANIA

Representative Alter offered in the House on April 3, 1911, the administration measure to create a public service commission of five members and repeal the Act of May 31, 1907, creating a State Railroad Commission of three members. The bill covers 63 printed pages and gives the commission power to inquire into and pass upon complaints against all railroads, street railways, express, baggage transfer, telegraph, telephone, electric light, water, water power and other companies doing a quasi-public business.

There are six articles and 94 sections to the bill. Every public service company would be required to post all tariffs and schedules in its offices and stations for the convenience of the public at least 10 days before same become effective and to permit the joint use of any conduits, subways, station or terminal facilities by two or more companies where the public service is not impaired. Railroads and street railways would be required to furnish sufficient facilities properly and safely to handle their patrons, and to add to their equipment or make such changes in their equipment and facilities as may be reasonably required by the commission after investigation and within a reasonable period. All public service corporations would have the right of appeal to the commission from the application of any regulation of that body deemed oppressive or unjust, and to obtain additional rights and franchises or transfer or merge its interests with other corporations provided the commission should deem it beneficial to the public welfare. Public service companies would be prohibited from issuing stocks, except for money, labor performed or property actually received, and before so doing would have to obtain a certificate from the commission to that effect. Neither would they be allowed to control the capital stock of another corporation without the approval of the commission or issue stocks or bonds to cover reorganized companies without the approval of the commission.

The commissioners would be appointed by the Governor, subject to confirmation by the Senate. One of the commissioners is required to be learned in the law, another in economics, another in the business of common carriers. Each commissioner must be at least 25 years of age and a resident of the State for at least one year. No person would be eligible to the office of commissioner who is identified with a carrying corporation. The first appointments to the commission would be for one, two, three, four and five years, respectively, from July 1, 1911, but their successors are each to be appointed for five-year terms. The Governor is to designate the chairman of the commission when making the appointments. Each commissioner would receive a salary of $8,000 per year. The principal office of the commission is to be at the Capitol, Harrisburg, but branch offices are to be maintained in Philadelphia and Pittsburgh.

The right of appeal to the Supreme Court is given in the bill. The commission is to report in regard to its work in detail to the Governor on or before the second Monday of January of each year.

Financial and Corporate

New York Stock and Money Market

April 4, 1911.

Wall Street is still awaiting the decisions in the trust cases, and pending these there is little disposition to make any important commitments on either side of the market.

The bond market continues to be satisfactory and there are ready sales for all issues that pass successfully the close scrutiny of the educated investor of the present day. Money is plentiful and cheap. Rates to-day were: Call, 2@2⅜ per cent; 90 days, 2¾@3 per cent.

Other Markets

There have been some considerable blocks of traction shares sold during the past week in the Philadelphia market, but the trading has been sporadic and far from a general movement.

In the Boston market only Boston Elevated and Massachusetts Electric have been in the dealing and these are not so freely offered as heretofore.

There was no market in Chicago to-day on account of the election and for the week previous tractions were almost wholly absent from the list.

In Baltimore there has continued to be fairly good trading in both the stock and the bonds of the United Railways and the price of the former has slightly advanced.

Quotations as compared with last week follow:

	March 28.	April 4.
American Light & Traction Company (common)	a293	a295
American Light & Traction Company (preferred)	a106	a107
American Railways Company	a44½	a43⅞
Aurora, Elgin & Chicago Railroad (common)	44	a44
Aurora, Elgin & Chicago Railroad (preferred)	88	a88
Boston Elevated Railway	a129	a129½
Boston Suburban Electric Companies (common)	*15½	a16
Boston Suburban Electric Companies (preferred)	73	73
Boston & Worcester Electric Companies (common)	8½	a10
Boston & Worcester Electric Companies (preferred)	41	43
Brooklyn Rapid Transit Company	78¾	78⅞
Brooklyn Rapid Transit Company, 1st ref. conv. 4s	84¼	84¼
Capital Traction Company, Washington	a126½	a126½
Chicago City Railway	a190	190
Chicago & Oak Park Elevated Railroad (common)	3	3
Chicago & Oak Park Elevated Railroad (preferred)	7	7
Chicago Railways, ptcptg., ctf. 1	a91	a90
Chicago Railways, ptcptg., ctf. 2	a24½	a24½
Chicago Railways, ptcptg., ctf. 3	a10	a10
Chicago Railways, ptcptg., ctf. 4	a5½	a5
Cincinnati Street Railway	a132	132
Cleveland Railway	92½	94¾
Columbus Railway (common)	a96	*96
Columbus Railway (preferred)	a101½	*101½
Consolidated Traction of New Jersey	a76½	a76½
Consolidated Traction of N. J., 5 per cent bonds	a105	a105
Dayton Street Railway (common)	a30	a30
Dayton Street Railway (preferred)	a105	a105
Detroit United Railway	a69¼	a71
General Electric Company	148½	148½
Georgia Railway & Electric Company (common)	a133	a133
Georgia Railway & Electric Company (preferred)	90	a91
Interborough Metropolitan Company (common)	18¾	19
Interborough Metropolitan Company (preferred)	53¼	53½
Interborough Metropolitan Company (4½s)	78¾	78⅝
Kansas City Railway & Light Company (common)	a24¾	22¼
Kansas City Railway & Light Company (preferred)	a70	70
Manhattan Railway	a136½	138
Massachusetts Electric Companies (common)	17½	a17¼
Massachusetts Electric Companies (preferred)	a87	88
Metropolitan West Side, Chicago (common)	a23⅞	23⅞
Metropolitan West Side, Chicago (preferred)	a69¼	69¼
Metropolitan Street Railway, New York	*15	*15
Milwaukee Electric Railway & Light (preferred)	110	110
North American Company	a71½	71¾
Northern Ohio Light & Traction Company	*43¼	*43¼
Northwestern Elevated Railroad (common)	a23	23
Northwestern Elevated Railroad (preferred)	a64¾	63¾
Philadelphia Company, Pittsburgh (common)	a54¼	a53⅜
Philadelphia Company, Pittsburgh (preferred)	a43	43
Philadelphia Rapid Transit Company	a19¾	19½
Philadelphia Traction Company	84¼	84
Public Service Corporation, 5% col. notes (1913)	a101½	a100½
Public Service Corporation, ctfs	a106	a106
Seattle Electric Company (common)	a108	a107
Seattle Electric Company (preferred)	a98	a98½
South Side Elevated Railroad (Chicago)	a71	71
Third Avenue Railroad, New York	103⅜	a101¼
Toledo Railways & Light Company	a8½	a8
Twin City Rapid Transit, Minneapolis (common)	a108¾	a108½
Union Traction Company, Philadelphia	a47½	a46⅝
United Rys. & Electric Company, Baltimore	19	18¾
United Rys. Inv. Co. (common)	*47½	a46
United Rys. Inv. Co. (preferred)	75½	a74½
Washington Ry. & Electric Company (common)	a36½	a38
Washington Ry. & Electric Company (preferred)	a89¼	a89½
West End Street Railway, Boston (common)	a91	a90
West End Street Railway, Boston (preferred)	a103½	a103
Westinghouse Elec. & Mfg. Co.	67	a67
Westinghouse Elec. & Mfg. Co. (1st pref.)	120½	121

aAsked. *Last sale.

Annual Report of the North American Company

A comparative statement of the income account of the North American Company for the years 1910 and 1909 follows:

	1910.	1909.
Interest received and accrued	$712,902	$556,842
Dividends received	1,357,304	1,153,539
Profits and compensation for services	34,797	313,036
Total	$2,105,003	$2,023,417
Salaries, legal expenses, net rentals and all other expenses of administration	$80,547	$104,029
Taxes	5,657	5,239
Interest and commissions paid and accrued	107,477	128,194
Sundry accounts written off and reserves	57,937	.....
Net decrease in book value of assets	.....	79,079
Total	$251,618	$316,541
Net income	$1,853,385	$1,706,876
Credit balance of undivided profits at close of previous fiscal year	3,662,987	3,445,776
Total	$5,516,372	$5,152,653
Dividends paid and accrued during year	1,489,665	1,489,665
Credit balance of undivided profits at close of fiscal year	$4,026,707	$3,662,988

James Campbell, the president, says in the report, in part:

"The stocks owned by the company are principally those of street railway, electric light and gas companies, whose management and general policy are under the supervision of the North American Company.

"The company has during the year acquired the stock and indebtedness of the Suburban Electric Light & Power Company and consolidated it with the King Electric Company, of St. Louis, Mo., the stock of which had been previously acquired by this company.

"The bonds owned by this company are the following: Milwaukee Light, Heat & Traction Company refunding and extension mortgage 30-year 5 per cent bonds, $5,000,000 par value; Racine Gas Light Company consolidated mortgage 30-year 5 per cent bonds, $287,000 par value; Kenosha Gas & Electric Company first mortgage 5 per cent bonds, $45,000 par value; Detroit Edison Company 10-year convertible 6 per cent bonds, $221,000 par value.

"Loans and advances consist of money loaned to individuals and corporations upon their notes, with ample collateral security, together with advances to subsidiary companies.

"The company has subscribed to $500,000, principal amount, of 5 per cent bonds, and $200,000, par value, of common stock, of the Mississippi River Power Company, a corporation now vested with the title to the franchise for the development of the water power at Keokuk Rapids on the Mississippi River, and in whose name the title to the completed property will rest. The financing of the Keokuk water-power enterprise has been carried through by Kidder, Peabody & Company and Stone & Webster, in association with other well-known bankers. The financial plan provides for the issue of $16,000,000, principal amount, of bonds, $6,000,000, par value, of 6 per cent preferred stock, and $16,000,000, par value, of common stock.

"As was stated in the annual report of this company for the fiscal year ended Dec. 31, 1909, of the $5,000,000, par value, of five-year 5 per cent collateral trust notes, dated May 1, 1907, $2,584,000 had been canceled, leaving outstanding $2,416,000. This company has acquired by purchase during the fiscal year of 1910 $495,000 additional notes, leaving outstanding in the hands of the public $1,921,000.

"This company has no contingent liabilities, except an instrument of guaranty, dated March 1, 1906, executed to the Trust Company of America, as trustee under the first mortgage of the West Kentucky Coal Company, whereby it has guaranteed the payment by that company of the interest upon $2,000,000, par value, of its first mortgage bonds and of the sinking fund payments pertaining thereto; $57,000, par value, of these bonds have been retired through the sinking fund, leaving $1,943,000, par value, outstanding.

"The combined gross revenues of the Milwaukee group of properties showed an increase over the previous year of 12.6 per cent; operating expenses, taxes and reserves an increase of 18 per cent; gross income an increase of 0.81 per cent; interest charges an increase of 1.64 per cent, and net income a decrease of 0.54 per cent. Increased operating expenses, caused by the higher standard of wages and increased cost of materials prevailing generally throughout

the country, and increased expenses of maintenance absorbed practically all the increase in gross revenue. There has been expended during the year on additions to the physical property of these companies the sum of $1,431,790.

"The gross revenue of the United Railways Company of St. Louis showed an increase over the previous year of 4.2 per cent; operating expenses, taxes and reserves an increase of 12.5 per cent; gross income a decrease of 10 per cent; interest charges a decrease of 0.16 per cent, and net income a decrease of 31.5 per cent. The increase in operating expenses is partly due to increased wages and higher cost of materials and supplies, and partly due to an increase in the appropriation for depreciation reserve. The charge to operating expenses for depreciation during the year 1910 was increased to 10 per cent of the gross revenue, experience having shown that this proportion of the gross revenue is required to provide for the present annual rate of depreciation of the property. There has been expended during the year on additions to physical property the sum of $325,792.

"It has for many years been the policy of this company, in the direction of the affairs of its subsidiaries, to appropriate annually out of the earnings of these companies sums of money for maintenance and depreciation of the physical properties as large as seemed justified by experience and good judgment. Your board of directors feels that the statements of earnings of subsidiaries are on a very conservative basis, and that dividends are not being paid to this company at the expense of the complete preservation of the physical properties of the subsidiaries. The proportion of gross revenue expended on maintenance and appropriated for depreciation out of revenue is set forth in the accompanying tabular statement:

Name of Company.	Per Cent of Gross Revenue Expended or Appropriated for: Maintenance.	Depreciation.	Total.
Milwaukee companies:			
Railway departments	11.3	9.9	21.2
Gas, electric light and steam heat departments	6.15	8.12	14.27
United Railways Company of St. Louis	13.67	10.0	23.67
Union Electric Light & Power Company	4.95	16.0	20.95
*St. Louis County Gas Company	2.9	6.5	9.4
*Suburban Electric Light & Power Company	7.10	10.85	17.95
†Detroit Edison Company and subsidiaries.	6.45	10.23	16.63

*These companies have no generating plants.
†The board of directors of the Detroit Edison Company appropriated out of surplus account $310,000, for depreciation reserve, and these figures have been computed on the basis of applying this entire amount to the year 1910.

The principal assets, as shown by the balance sheet as of Dec. 31, 1910, are: Stocks, $22,029,053; bonds, $5,085,106; loans and advances, $7,430,673.

A consolidated income account for the fiscal year ended Dec. 31, 1910, for the Milwaukee Electric Railway & Light Company, Milwaukee Light, Heat & Traction Company, Milwaukee Central Heating Company, Racine Gas Light Company, Kenosha Gas & Electric Company and Watertown Gas & Electric Company, and a statement of the United Railways Company of St. Louis for the same period follow:

YEAR ENDED DEC. 31, 1910

	Milwaukee Group of Properties.	United Railways, St. Louis.
Gross revenue	$6,428,710	$11,580,841
Operating expenses, taxes and reserves	4,382,611	7,906,103
Gross income	$2,046,099	$3,674,739
Interest accrued	1,278,719	2,793,743
Net income	$767,380	$880,995
Preferred stock dividends	270,000	409,580
Balance	$497,380	$471,415

Catskill (N. Y.) Traction Company.—Herman C. Cowen has secured control of the Catskill Traction Company through the purchase of the holdings of W. C. Wood, president of the company. Mr. Cowen and P. G. Coffin have been elected directors of the company to succeed L. G. Hechinger, East Orange, N. J., and N. J. Conway, South Woodstock, Vt., and John Conway, South Woodstock, Vt.

Central Park, North & East River Railroad, New York, N. Y.—Judge Lacombe, in the United States Circuit Court, has signed an order permitting the Central Park, North & East River Railroad to file an appeal to the United States Court of Appeals from the final decree of foreclosure and sale order by the Circuit Court. Judge Lacombe has also directed that all parties in the suit be cited to appear in the Circuit Court of Appeals on April 15, 1911, and show cause why the final decree of foreclosure and sale should not be reversed or modified.

Des Moines (Ia.) City Railway.—The new officers of the Des Moines City Railway and the Inter-Urban Railway follow: President, A. W. Harris; vice-president, treasurer and general manager, J. R. Harrigan; secretary, N. T. Guernsey; N. W. Harris, A. W. Harris, J. R. Harrigan, N. T. Guernsey, Edw. P. Smith, G. P. Hoover, Andrew Cooke, directors.

Indianapolis, New Castle & Toledo Electric Railway, Indianapolis, Ind.—April 22, 1911, has been set as the date for the sale of the property of the Indianapolis, New Castle & Toledo Electric Railway under foreclosure.

Jacksonville (Fla.) Traction Company.—The Jacksonville Traction Company, which was incorporated recently under the laws of Massachusetts with an authorized capital stock of $1,500,000, of which $1,000,000 is common stock and $500,000 is 6 per cent cumulative preferred stock, will succeed the Jacksonville Electric Company, the stock of which will be exchanged share for share for the stock of the Jacksonville Traction Company, or the holders of the stock of the Jacksonville Electric Company will be paid $100 a share in cash for their holdings. The Jacksonville Traction Company will have an authorized issue of $5,000,000 of first consolidated mortgage 5 per cent bonds, of which $1,250,000 will be reserved to take up a like amount of the bonds of the Jacksonville Electric Company which mature in 1927, $750,000 will be sold for additions and improvements, and the remaining $3,000,000 will be issued at not less than 80 per cent for permanent additions and improvements. Stockholders of the Jacksonville Electric Company have been asked to deposit their stock with the State Street Trust Company, Boston, Mass, on or before April 12, 1911, on which date a special meeting of the stockholders has been called to authorize the transfer.

Northern Ohio Traction & Light Company, Akron, Ohio.—On April 3, 1911, W. E. Hutton & Company, New York, offered for subscription at 97½, to yield 6.15 per cent, the unsold balance of $1,000,000 of the 6 per cent cumulative preferred stock of the Northern Ohio Traction & Light Company. As stated in the Electric Railway Journal of March 4, 1911, page 396, the proceeds of the issue will be used to finance improvements.

Northwestern Elevated Railroad, Chicago, Ill.—On March 29, 1911, the Chicago *Record-Herald* said that the deal which has long been pending for the consolidation of the elevated railroads of Chicago had been perfected, but that Mr. Blair had refused to divulge the details or the basis on which the stocks of the separate companies would be taken over. The National City Bank of New York, it was said, would furnish $22,000,000 of capital. In the East Mr. Blair was quoted as having denied that the merger of the companies had been completed. Likewise it was also stated in the East that the statement to the effect that the National City Bank of New York has underwritten the stock and bond issues, amounting to approximately $22,000,000, was premature.

Old Colony Street Railway, Boston, Mass.—The Railroad Commission of Massachusetts has approved an issue of 2920 shares of additional common stock by the Old Colony Street Railway at $100 per share, as fixed by stockholders, for meeting cost of necessary additions and improvements. The company petitioned for permission to issue 3000 shares.

Public Service Corporation of New Jersey, Newark, N. J.—Gross revenues for the year ended Dec. 31, 1910, of leased and controlled companies were $29,205,194, an increase of $2,644,743 over the preceding year. Of the total last year $1,532,348 was income from securities and miscellaneous sources. Operating expenses and taxes aggregated $14,611,300 and bonds, interest and rentals of leased and controlled companies amounted to $10,558,243. Fixed charges of the Public Service Corporation of New Jersey were $1,835,356, leaving net income of $2,200,295. Against this amount there were charged for reserves $125,000 by the Public Service Corporation and $5,000 by the River-

side & Fort Lee Ferry Company. From the remaining surplus of $2,070,295 dividends of 5 per cent or $1,250,000 were paid on the capital stock. Of the total earnings last year $13,308,726 was received from the railway properties as compared with $12,114,412 in the previous year. The number of passengers carried in 1910 was 341,398,688, of which 258,746,130 were revenue passengers and 82,652,558 were carried on transfers and passes. In the preceding year the total number of passengers carried was 319,720,235, of which 238,171,257 were revenue passengers and 81,548,978 were carried on transfers and passes. Passenger receipts per car mile were 30.29 cents in 1910 and 29.08 cents in 1909. Passenger receipts per car hour were $2.60 in 1910 and $2.50 in 1909. The company built 4.57 miles of railway extensions during 1910. Thomas N. McCarter, the president, refers in the annual report to the Board of Public Utility Commissioners of New Jersey as follows: "It is a pleasure to say that the commissioners have entered upon their duties seriously and with a due regard to the importance of the interests to be supervised by them and that the relations of the companies owned by this corporation with said commission have been and are both cordial and agreeable." The directors of the Public Service Corporation of New Jersey declared a quarterly dividend of 1½ per cent on the $25,000,000 stock of the company on March 31, 1911, thus increasing the annual rate from 5 per cent to 6 per cent.

Quakertown (Pa.) Traction Company.—The time limit for the holders of the $300,000 of bonds of the Quakertown Traction Company to accept the offer of the Lehigh Valley Traction Company to exchange the bonds expired on March 25, 1911, and it was announced that a sufficient number of bonds had been deposited to assure the approval of the plan.

Quebec Railway, Light, Heat & Power Company, Quebec, Que.—The directors of the Quebec Railway, Light, Heat & Power Company have declared an initial dividend of 1 per cent on the capital stock of the company, payable April 15, 1911, to stockholders of record on March 31, 1911.

Southwestern Street Railway, Philadelphia, Pa.—The sale of the property of the Southwestern Street Railway under foreclosure, to which reference was made in the Electric Railway Journal of April 1, 1911, page 613, has been fixed for April 21, 1911.

Somerset Water, Light & Traction Company, Somerset, Ky.—The property of the Somerset Water, Light & Traction Company, sold under foreclosure recently, has been transferred to the United Water, Light & Traction Company. The following officers have been elected by the new company: O. H. Waddle, president; M. O. Curd, vice-president; J. H. Gibson, treasurer; George G. Waddle, secretary, and J. L. Waddle, general manager.

Springfield & Xenia Railway, Xenia, Ohio.—Gross earnings in the year ended Dec. 31, 1910 were $71,440 as compared with $65,827 in the preceding year. Operating expenses and taxes were $53,395 as compared with $51,685. Net earnings were $18,045 against $14,142. The number of car miles operated last year was 244,148 as compared with 242,480 in the preceding year. Gross income per car mile was 29.26 cents in 1910 and 27.15 cents in 1909. The number of passengers carried was 442,337 in 1910 and 396,451 in 1909. The gross revenue per passenger was 16.15 cents last year and 16.6 cents in the preceding year.

Third Avenue Railroad, New York, N. Y.—The United States Circuit Court of Appeals has handed down an order affirming the decision of Judge Lacombe in the United States Circuit Court overruling the claims of the American Surety Company and the State of New York against the Third Avenue Railroad. The decision of Judge Lacombe affirmed the report of Howard Taylor, special master appointed in the case, to the effect that the claims of the American Surety Company for $44,561 and of the State of New York for $2,543 were not entitled to preference or priority in the distribution of funds in the hands of Receiver Whitridge or in the proceeds of the foreclosure sale. On the other hand, Judge Lacombe held that the mortgage representing $40,381,173 has the priority.

Washington & Rockville Railroad, Washington, D. C.—The Washington & Rockville Railroad has been placed in the hands of George Weems Williams, Baltimore, Md., as receiver, by Judge Morris, of the United States Court, on the application of the Washington Railway & Electric Company, by which the road is leased.

Dividends Declared

Auburn & Syracuse Electric Railroad, Syracuse, N. Y., quarterly, 1½ per cent, preferred.

Boston (Mass.) Suburban Electric Companies, quarterly, $1, preferred.

Cincinnati, Newport & Covington Light & Traction Company, Covington, Ky., quarterly, 1⅛ per cent, preferred; quarterly, 1⅛ per cent, common.

Dallas (Tex.) Electric Corporation, 3 per cent, first preferred; 2 per cent, second preferred.

Fort Smith Light & Traction Company, Fort Smith, Ark., quarterly, 1¾ per cent, preferred.

Lancaster County Railway & Light Company, Lancaster, Pa., quarterly, 1¼ per cent, preferred.

Louisville & Northern Railway & Light Company, Louisville, Ky., quarterly, ¾ of 1 per cent, preferred.

Manchester Traction, Light & Power Company, Manchester, N. H., quarterly, 2 per cent.

Memphis (Tenn.) Street Railway, quarterly, 1¼ per cent, preferred.

Milwaukee Electric Railway & Light Company, quarterly, 1½ per cent, preferred; quarterly, 1½ per cent, common.

Ottumwa Railway & Light Company, Ottumwa, Ia., quarterly, 1¾ per cent, preferred.

Public Service Corporation of New Jersey, Newark, N. J., quarterly, 1½ per cent.

Springfield & Xenia Railway, Springfield, Ohio, quarterly, 1¼ per cent, preferred.

West Pennsylvania Traction Company, Pittsburgh, Pa., quarterly, 1½ per cent, preferred.

Wheeling (W. Va.) Traction Company, quarterly, 1 per cent.

Youngstown & Ohio River Railway & Light Company, Youngstown, Ohio, quarterly, ¾ of 1 per cent, preferred.

MONTHLY ELECTRIC RAILWAY EARNINGS

CLEVELAND, PAINESVILLE & EASTERN RAILROAD.

Period.			Gross Revenue.	Operating Expenses.	Net Revenue.	Fixed Charges.	Net Income.
1m.,	Feb.	'11	$21,053	*$12,988	$8,065	$8,175	†$110
1 "	"	'10	18,702	*11,900	6,801	7,922	†1,121
2 "	"	'11	44,167	*26,566	17,601	16,347	1,254
2 "	"	'10	39,786	*24,138	15,648	15,908	†260

CLEVELAND, SOUTHWESTERN & COLUMBUS RAILWAY.

1m.,	Jan.	'11	$80,805	$48,268	$32.537	$29,720	$2,817
1 "	"	'10	71,032	48,133	22,900	29,794	†6,895

DALLAS ELECTRIC CORPORATION.

1m.,	Jan.	'11	$155,180	$77,998	$57,182	$27,422	$29,759
1 "	"	'10	118,721	80,752	37,969	26,407	11,562
12 "	"	'11	1,485,777	948,391	537,386	310,049	227,337
12 "	"	'10	1,336,591	836,444	500,146	335,379	164,767

EAST ST. LOUIS & SUBURBAN COMPANY.

1m.,	Feb.	'11	$168,680	$92,970	$75,710	.....	.....
1 "	"	'10	175,234	94,765	80,469	.....	.....
2 "	"	'11	357,404	189,609	167,795	.....	.....
2 "	"	'10	363,427	193,082	170,345	.....	.....

GALVESTON-HOUSTON ELECTRIC COMPANY.

1m.,	Jan.	'11	$111,166	$68,147	$43,019	$29,694	$18.325
1 "	"	'10	96,631	67,615	29,017	23,141	5,875
12 "	"	'11	1,327,521	797,275	530.246	291,776	238,470
12 "	"	'10	1,211,739	717,649	494,090	265,007	229,083

KOKOMO, MARION & WESTERN TRACTION COMPANY.

1m.,	Dec.	'10	$23,091	$9,992	$13,098	$7,164	$5,934
1 "	"	'09	21,441	9,144	12,297	6,940	5,357
12 "	"	'10	261,485	113,385	148,100	85,973	62,127
12 "	"	'09	233,863	99,546	134,317	83,638	50,678

MONTREAL STREET RAILWAY COMPANY.

1m.,	Feb.	'11	$330,738	$227,604	$103,133	$41,974	$61,159
1 "	"	'10	303,977	204,256	99,722	39,875	59,846
5 "	"	'11	1,830,922	1,135,988	694,934	182,783	512,151
5 "	"	'10	1,656,040	996,194	659,854	171,911	487,935

NORTHERN OHIO TRACTION & LIGHT COMPANY.

1m.,	Feb.	'11	$172,413	*$104,865	$67,545	$44,357	$23,187
1 "	"	'10	146,207	*92,513	53,693	43,292	10,402
2 "	"	'11	358,684	*211,772	146,912	88,786	58,126
2 "	"	'10	311,151	*187,014	124,137	86,583	37,554

PORTLAND RAILWAY, LIGHT & POWER COMPANY.

1m.,	Feb.	'11	$478,263	*$241,442	$236,821	$124,715	$112,106
1 "	"	'10	393,076	*190,313	202,763	111,081	91,682
2 "	"	'11	989,887	*512,055	477,832	248,225	229,607
2 "	"	'10	824,087	*382,201	441,886	230,233	211,653

ST. JOSEPH RAILWAY, LIGHT, HEAT & POWER COMPANY.

1m.,	Feb.	'11	$83,126	*$48,635	$34,491	$19,276	$15,215
1 "	"	'10	79,271	*47,519	31,752	17,967	13,785
2 "	"	'11	174,114	*99,861	74,253	38,569	35,084
2 "	"	'10	168,579	*98,525	70,054	35,884	34,170

Traffic and Transportation

Interurban Depot at Cleveland Proposed

An elaborate plan has been announced for an interurban depot at Cleveland. D. H. Burnham, a prominent Chicago architect, has made tentative plans for the structure and will be financially interested in it. The May Department Stores Company, the Bailey Company, the Higby Company and other companies, through their individual officers and representatives, have agreed to aid in financing. The plan is to occupy the entire block bounded by the Public Square, Superior Avenue, West Third Street and Champlain Avenue with a structure which will combine an interurban terminal, a hotel and an elegant office structure. The site is now occupied by the Forest City House, the old Higby stores and several smaller buildings. The hotel portion will be 12 stories high and will open on the Public Square. The office structure, which will occupy the Superior Avenue side and extend back through the block, will be 16 stories high. Through the structure between Superior Avenue and Champlain Avenue there will be four tracks for the entrance of interurban cars flanked by waiting rooms, ticket offices, parcels rooms, baggage rooms and the other accessories. The entrance to the station will be from the Public Square and also from West Third Street. On the south side of the block space will be arranged for a train shed. There will be an underground walk under the tracks and provision will be made for subway terminals in case tracks are brought into the center of the city under ground. It is estimated that the structure will cost $4,500,000. A. S. Taylor, of V. C. Taylor & Sons, has charge of the leasing work. At a meeting of the directors of the Electric Depot Company in the offices of the Cleveland Railway on March 31, 1911, it was decided not to build a station on land where the interurban freight station is located, but the terminal facilities of the proposed building will be taken over. A. E. Akins, first vice-president of the Cleveland, Southwestern & Columbus Railway, is the president of the depot company, and Henry J. Davies, secretary and treasurer of the Cleveland Railway, is secretary.

Service Order on Long Island.—The Long Island Electric Railway has been ordered by the Public Service Commission to reduce the headway of cars between 6 a. m. and 9 a. m. and between 5 p. m. and 7 p. m. from 20 minutes to 10 minutes on the Jamaica-Far Rockaway division.

Fares Between Los Angeles and Santa Monica.—An agreement has been reached between the Los Angeles-Pacific Company and the residents of Santa Monica by which the company will place on sale a 30-ride family book, good for 90 days, for $4.50; a 90-ride family book, good for 90 days, $7; a 54-ride individual book, good for calendar month, $5.50.

Complaint About Insufficient Guards in New York.—The Public Service Commission of the First District has adopted a complaint order directing the Interborough Rapid Transit Company to answer a complaint to the effect that there are not enough platform guards on the stations in the rush hours in the subway and at the Twenty-third Street station of the Third Avenue elevated line.

Changes in Routing at Detroit.—Frank H. Croul, police commissioner of Detroit, Mich., has suggested to the Detroit (Mich.) United Railway a number of changes in the routing of cars to relieve congestion on Woodward Avenue and other downtown streets during the rush hours. A. D. B. Van Zandt, of the company, is reported to have said that the proposed changes had not yet been analyzed.

Milk Service by the Chicago & Southern Traction Company.—A new milk train is being run every morning by the Chicago & Southern Traction Company northward from Kankakee, collecting milk at the smaller stations and delivering it to Chicago Heights, Harvey, Blue Island and Chicago. The promotion of the milk business is in the hands of Robert J. Barnett, traffic agent of the company.

Prepayment Cars in San Francisco.—On March 19, 1911, the United Railroads of San Francisco placed 10 new pay-as-you-enter cars in operation on its Sutter-Jackson Street line. The Cliff House line is being equipped with similar cars and other lines will also be equipped as fast as the cars are received. Eighty of these cars have been ordered for delivery within the next six months, and the cars now in service will probably be rebuilt as pay-as-you-enter cars.

Transfers in Louisville.—T. J. Minary, president of the Louisville (Ky.) Railway, has issued a statement with reference to the ordinance proposed in the Council of Louisville which provides for so-called universal transfers. Mr. Minary said that in his opinion universal transfers are now being given, the only thing guarded against being the return of a passenger to the starting point on the payment of only one fare.

Concession to Retain Interurban Station.—Merchants of Anderson, Ind., in the vicinity of the Union Building have agreed to pay the rent of the basement of that building for the use of the Indiana Union Traction Company as a station in order to prevent the station from being moved to some other locality. The train caller will be stationed on the sidewalk and announce trains through a megaphone. Freight and baggage will be handled by a small elevator which will be built through the sidewalk at the building line.

Designating Service on Illinois Traction System.—On April 16, 1911, Easter Sunday, when the new spring uniforms are worn for the first time by the employees of the Illinois Traction System, Peoria, Ill., a new system for designating the length of service of each man will be adopted. Three years of service with the company will entitle a trainman to one stripe on his left sleeve and five years of service will entitle a man to a star. When a man has served eight years he will be entitled to a star and a stripe and when he has served 10 years he will be entitled to two stars.

Northwestern Elevated Railroad Improves Service.—The train service between the Loop district in Chicago and Evanston, operated by the Northwestern Elevated Railroad over its four-track elevated structure between the downtown district and Wilson Avenue and thence over the double-track line leased from the Chicago, Milwaukee & St. Paul Railroad northward through Evanston to Central Street, where connection is made with the Chicago & Milwaukee Electric Railway, has been improved by a reduction in the headway of trains operated during the rush hours and by the omission of the stop formerly made at Sheridan Road. The headway of Evanston through trains is now eight minutes during rush hours. These five-car trains make all stops in the Loop district of Chicago. No stops are made, however, between Kinzie Street and Argyle, 6.6 miles. The total run of these trains is approximately 12 miles and the schedule time 45 minutes. By the omission of the Sheridan Road stop the Evanston trains are relieved from carrying any passengers destined for points on the elevated and busier section of the road.

Tact.—In an article which he contributed to the March issue of the *Tramway Bulletin*, which is published in the interest of the employees of the Denver City Tramway, Charles B. Wells, superintendent of transportation of the company, said: "I want to talk to you a little about tact. Some of us seem to be born with it, and others acquire it by sad experience, and we have to endure many of the slings and arrows of misfortune before we learn to realize what a valuable asset it is. A man who possesses the subtle arts of tact and diplomacy is universally thoughtful and kind. There is an air of refinement about him that won't brush off. Theorize about this a little, then try it out on your family. If it works practise it on the passengers and on your other friends. Was I wrong when I spoke about the passengers as your friends? They should be, shouldn't they? How much easier it is to 'jolly' a big load of your friends out of the 'pit' than the same sized crowd who care nothing for you! If an accident occurs or any difficulty arises, who will have the least trouble in securing witnesses or reaching an amicable settlement—the man of kindly nature who possesses tact or the one who doesn't employ it? We have many men on this system who are tactful to a remarkable degree. I know it; and it does make me feel some proud and chesty when one of the company's patrons takes the pains to tell me what an efficient conductor and what a fine fellow this one or that one is, and how his attentive and agreeable manners are appreciated by the passengers."

Personal Mention

Mr. J. B. Warner has been appointed superintendent of the Platte Street power house of the Denver (Col.) City Tramway.

Mr. Norman Read has been appointed electrical engineer of the Denver (Col.) City Tramway in charge of all matters pertaining to the construction and operation of power for the entire system.

Mr. A. W. Harris has been elected president of the Des Moines (Ia.) City Railway and the Inter-Urban Railway, Des Moines, Ia., to succeed Mr. G. B. Hippee and Mr. H. H. Polk, respectively.

Mr. Tudor Jones has been appointed traveling auditor of the Indiana Union Traction Company, Anderson, Ind., to succeed Mr. Alva E. Moore, who has been appointed division freight and passenger agent of the company.

Mr. J. R. Harrigan, vice-president and general manager of the Des Moines (Ia.) City Railway and the Inter-Urban Railway, Des Moines, Ia., has also been elected treasurer of these companies to succeed Mr. G. B. Hippee.

Mr. W. G. Evans, president of the Denver (Col.) City Tramway and first vice-president of the Denver & Northwestern Railway, has been elected president of the Denver, Northwestern & Pacific Railway, Denver, Col., to succeed David H. Moffett, deceased.

Mr. John F. Stevens has resigned as president of the United Railways and the Oregon Electric Railway, Portland, Ore., having retired as president of the Astoria & Columbia River Railroad, Oregon Trunk Railway, Pacific & Eastern Railway and Spokane, Portland & Seattle Railway, with offices at Portland.

Mr. Edward C. Thomas has been appointed advertising manager for the Pacific Electric Railway, Los Angeles, Cal., and all lines operating in connection with that company. Mr. Thomas was formerly general agent of the passenger department of the Los Angeles & Redondo Railway, which has been merged with the Pacific Electric Railway.

Mr. Alva E. Moore has been appointed division freight and passenger agent of the Indiana Union Traction Company with headquarters at Anderson, Ind., to succeed Mr. Joseph F. Starkey, who has been appointed traffic manager of the Lake Shore Electric Railway at Sandusky, Ohio, as noted in the Electric Railway Journal of April 1, 1911. Mr. Moore was formerly traveling auditor of the Indiana Union Traction Company.

Mr. Herman C. Cowen has been elected president of the Catskill (N. Y.) Traction Company to succeed Mr. W. C. Wood. Mr. Cowen was born in Emporia, Kan., and was educated in the public schools of that State, at the Missouri State University and at Lafayette College. He turned his attention to the cement industry and in 1898 was appointed superintendent of the Catskill Cement Company, a position he held until October, 1909, when the company's holdings were purchased by the Alpha Cement Company. Mr. Cowen is president of the Catskill Board of Trade and a director in the Catskill National Bank.

Mr. E. W. Olds, whose resignation as superintendent of rolling stock of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., was noted in the Electric Railway Journal of March 4, 1911, was presented with a diamond scarfpin by Mr. John I. Beggs, retiring president of the company, at one of the regular weekly meetings of the officers of the company. Mr. Beggs expressed deep regret at the retirement of Mr. Olds from the company and concluded by making the presentation on behalf of himself and his associates. The employees of the department with which Mr. Olds was so long identified also signified their esteem by waiting on Mr. Olds at his office in the Kinnickinnic shops and presenting him with a gold watch and an album containing photographs and autographs of most of the shopmen and photographs of the shops and scenes in the vicinity of them. The presentation speech in this case was made by Mr. Howard A. Mullet, who succeeds Mr. Olds. As previously stated in the Electric Railway Journal, Mr. Olds resigned from the Milwaukee Railway & Light Company to sever his connection with the street railway industry and make his permanent home in California.

Mr. Carl Raymond Gray has been elected president of the United Railways and the Oregon Electric Railway, Portland, Ore., to succeed Mr. John F. Stevens, resigned. Mr. Raymond was formerly first vice-president of the St. Louis & San Francisco Railroad, with offices in St. Louis, Mo., and also succeeds Mr. Stevens as president of the Astoria & Columbia River Railroad, Oregon Trunk Railway, Pacific & Eastern Railway and the Spokane, Portland & Seattle Railway, with offices at Portland. Mr. Gray was born on Sept. 28, 1867, and was educated at the Arkansas Industrial University. He entered railway service in 1882 as a telegraph operator with the St. Louis & San Francisco Railroad, and has served continuously with that company since that time. He has filled the positions of telegraph operator and agent, clerk in the transportation department, commercial agent, division freight agent, division superintendent, superintendent of transportation, general manager, second vice-president and general manager and first vice-president.

Mr. A. C. Adams, whose appointment as superintendent of motive power of the Oregon Electric Railway and the United Railways, Portland, Ore., was mentioned in the Electric Railway Journal of March 18, 1911, was born at Everett, Kan., on Feb. 6, 1866. He was educated in the public schools and began his railway work in August, 1884, as a machinist's apprentice on the Missouri Pacific Railway. In October, 1887, Mr. Adams became connected with the Chicago, Rock Island & Pacific Railway as a machinist and was later pit foreman, roundhouse foreman, general foreman and master mechanic of the company. He resigned from the Chicago, Rock Island & Pacific Railroad in September, 1906, and in November, 1906, was appointed master mechanic of the Chicago, Burlington & Quincy Railway. A year later Mr. Adams became connected with the Delaware, Lackawanna & Western Railroad as master mechanic. In November, 1908, he was appointed master mechanic of the New York, New Haven & Hartford Railroad, which position he resigned to become superintendent of motive power of the Spokane, Portland & Seattle Railway, the Oregon Electric Railway and the United Railways, Portland, Ore. While he was actively engaged in railway work Mr. Adams supplemented the training which he received in the public schools by completing the mechanical course of the International Correspondence Schools, of Scranton.

OBITUARY

George C. Webster, formerly president of the Indianapolis & Greenfield Traction Company, Indianapolis, Ind., now merged with the Terre Haute, Indianapolis & Eastern Traction Company, is dead. Mr. Webster was 66 years old.

George Bowers Caldwell, for many years connected with the engineering department of Westinghouse, Church, Kerr & Company as one of the chief mechanical engineers, died March 31, 1911, at Yonkers, N. Y. His connection with this company began in 1893, and he was identified with the design and construction of the Kingsbridge power station of the Third Avenue Railroad, and supervised the design and installation of the Long Island Railroad's electrification, including the power house at Long Island City. His last work was in charge of design and construction of the mechanical and electrical features of the Pennsylvania Terminal Station in New York City.

Col. Dwight B. Wilson, superintendent of power and construction of the Denver (Col.) City Tramway, is dead, having succumbed to injuries which he received at the central power station of the company on Feb. 3, 1911. Col. Wilson was born on March 5, 1848, in Lewiston, Maine. He enlisted in the civil war as a private under General B. F. Butler and located at Greeley, Col., in 1887, as an architect and builder. In 1892 he became connected with the Hallack Lumber Company, Denver, Col., as architect and superintendent of building. In 1895 he was appointed commissioner of highways for Denver. In the fall and winter of 1900 and 1901, when the Denver City Tramway began to build its present central station, Colonel Wilson was made superintendent of construction, and when the station was completed he was made superintendent of power, his jurisdiction extending over all stations and carhouses.

Construction News

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

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

RECENT INCORPORATIONS

***Lee Street Terminal Company, Montgomery, Ala.**—Incorporated in Alabama to build electric and steam railways in Montgomery. Capital stock, $80,000. Officers: W. J. Hannah, president; S. H. Roberts, vice-president; J. M. Winchester, treasurer, and F. B. Powell, secretary.

***Peoria & Milwaukee Electric Railway, Springfield, Ill.**—Application for a charter has been made in Illinois by this company to build an electric railway. As yet the route of this line has not been laid out.

***Nortonville (Ky.) Traction Company.**—Application for a charter has been made by this company in Kentucky to build an electric railway in Nortonville. Capital stock, $100,000. Incorporators: Frank E. Mohr, Columbus, Ohio; Frank G. Hoge, Nortonville, Ky., and T. F. Callard, Hopkinsville, Pa.

***Manitoba Power Company, Winnipeg, Man.**—Incorporated in Manitoba by the Dominion government to build electric railways and take over the charters of several Manitoba power companies. Capital stock, $5,000,000.

***Moncton Tramways, Electricity & Gas Company, Ltd., Moncton, N. B.**—Incorporated in New Brunswick to build an electric railway in Moncton. The company plans to have about five miles of track completed this year.

Pine Brook Electric Railway, Caldwell, N. J.—Incorporated in New Jersey to build an 11-mile electric railway to connect Caldwell, West Caldwell, Montville, Hanover, Fox Hill and Denville. Capital stock, $110,000. Incorporators: Alexander Dallas, William L. Kerris, H. A. Dallas and Peter Beaton, Montville; Edward J. Duffy, Newark; H. H. Picking, East Orange, and Stanley Gedney, South Orange. [E. R. J., March 11, '11.]

***Charlotte & Norwood Railway, Charlotte, N. C.**—Application for a charter has been made in North Carolina by this company to build a steam or electric railway to connect Troy, Mount Gilead and Fayetteville. Incorporators: M. C. Mayer, D. P. Hutchison, N. S. Alexander, C. G. Creighton, J. A. Hancock, A. Little and J. F. Shinn.

***Hills & Dales Railway, Van Buren, Ohio.**—Incorporated in Ohio to build electric railways. Capital stock, $25,000. Incorporators: William Stroop, Edwin P. Mathews, Clayton; Albert C. Rice and O. J. Emrick.

***Springdale & Long Lake Railway, Portland, Ore.**—Application for a charter has been made in Oregon by this company to build a railway in Stevens and Spokane Counties, Washington. Headquarters: Portland, Ore. Capital stock, $10,000. Incorporators: Franklin Griffith, F. J. Lonergan and J. F. Phelan.

Tarentum, Brackenridge & Butler Street Railway, Tarentum, Pa.—Chartered in Pennsylvania to build a 2-mile electric railway in the vicinity of Tarentum. The contract for engineering work has been awarded to McKelvey & Hines, Pittsburgh. Capital stock, $100,000. Officers: McKinstry Griffith, president, and Otto Sontam, J. M. Griffith, C. H. Battey and F. Flaggenmeir, Tarentum; C. N. Schad, Saxonburg, and J. C. Smith, Brackenridge, directors. [E. R. J., Jan. 18, '11.]

***Southwestern Traction Company, Temple, Tex.**—Application for a charter has been made in Texas by this company, ostensibly the successor to the Belton & Temple Traction Company. Capital stock, $165,000. Incorporators: A. F. Bentley, P. L. Downs, W. S. McGregor, W. G. Haag and W. G. Bentley.

FRANCHISES

Calgary, Alta.—The Alberta Electric Railway has asked the City Council for a franchise to build its tracks through Calgary. It will connect Calgary, Medicine Hat, Lethbridge, McLeod and Wood Mountain. [E. R. J., April 1, '11.]

***Revelstoke, B. C.**—The Dominion Securities Company, Revelstoke, has been organized, it is reported, to build an electric railway in Revelstoke.

Los Angeles, Cal.—Paul Shoup has asked the Council for a franchise to connect the Pacific Electric Railway line on Sixth Street with the Los Angeles Pacific line on Hill Street.

Napa, Cal.—Theodore Bell, representing the Napa & Lakeport Railroad, San Francisco, has asked the Trustees to extend its franchise one year in which to build its line in Napa. It will extend down the west side of Napa Valley to San Rafael. [E. R. J., Sept. 5, '10.]

Stockton, Cal.—The San Joaquin Valley Electric Railway has received a franchise from the Board of Supervisors to build its tracks along McKinley Avenue, from Stockton to Franch Camp.

***Hobart, Ind.**—The Gary, Hobart & Eastern Traction Company has received a franchise from the Council to build its tracks through Hobart. This proposed railway will connect Gary and Hobart and be extended eventually to Goshen. U. P. Hord, Hobart, is interested.

Cherryvale, Kan.—D. H. Siggins, president of the Union Traction Company, Coffeyville, has received a franchise from the City Council to build a line to the eastern limit of Cherryvale.

Caledonia, Mich.—The Grand Rapids, Hastings & Battle Creek Interurban Railway, Grand Rapids, has received a franchise from the Common Council to build its tracks through Lake Street in Caledonia. A. C. Sekell, Grand Rapids, local representative. [E. R. J., Dec. 19, '08.]

St. Louis, Mo.—The Southern Traction Company has asked the City Council for a franchise to operate its line across the Free Bridge and over downtown streets in St. Louis.

Albany, N. Y.—The United Traction Company, Albany, has received a franchise to double-track its line on Hamilton Street, from Dove Street east to Philip Street, in Albany. Work will begin early in the spring. This company will also apply for a franchise to double-track its line on Hudson Avenue to South Pearl Street.

Skaneateles, N. Y.—The Auburn & Syracuse Electric Railroad, Syracuse, has received a franchise from the Council to double-track its line from Auburn to Skaneateles. The double-tracking will then extend from Syracuse to Auburn.

White Plains, N. Y.—The Hudson River & Eastern Traction Company, Ossining, has asked the Board of Trustees for a franchise over certain streets in White Plains.

***Warren, Ohio.**—Henry Orth has asked the County Commissioners for a franchises to build an electric railway between Warren and Bloomfield, via Champion, Bristolville, Bristol and Bloomfield.

Meaford, Ont.—The People's Railway, Berlin, will ask the Council for a franchise to build its tracks in Meaford.

Ottawa, Ont.—The Imperial Traction Company, Hamilton, has been authorized to build from Hamilton to Guelph, Berlin, Stratford, London, Woodstock and Brantford, and back to Hamilton, with extensions to Niagara Falls and Sarnia. L. B. Howland, Toronto, is interested. [E. R. J., Feb. 18, '11.]

Spartanburg, S. C.—The Greenville, Spartanburg & Anderson Railway will ask the City Council for a 60-year franchise to build its tracks through Spartanburg.

Centralia, Wash.—The Twin City Light & Power Company, Chehalis, has received a franchise from the City Council to extend its tracks on Tower Avenue and Third Street, in Centralia, to the city limits on the west.

***Cle Elum, Wash.**—Paul L. Richards, Tacoma, will ask the City Council for an electric railway franchise in Cle Elum. A similar franchise will be requested from the City Council of Roslyn. This is part of a plan to build an electric railway between Cle Elum and Roslyn.

TRACK AND ROADWAY

Birmingham & Shades Mountain Electric Railway, Birmingham, Ala.—Preliminary arrangements have been made by this company to build its 4-mile electric railway from Birmingham to the top of Shades Mountain and construction will begin shortly. It will be built by the High Point Land Company, of which Eugene Fies, Birmingham, is president. [E. R. J., Nov. 14, '08.]

British Columbia Electric Railway, Vancouver, B. C.—This company has completed and placed in operation its Burnaby branch. This line forms the connecting link between Vancouver and the Chilliwac branch.

Red Bluff, Cal.—C. L. Donohoe, Willows, is interested in a projected railway to connect Woodland, Colusa, Willows, Orland, Corning, Red Bluff and Redding. A meeting will be held in Willows shortly, at which the preliminary details will be arranged. The proposed road is intended to connect at Woodland with the Vallejo & Northern Railway.

***San Bernardino, Cal.**—J. D. Armstead, representing Los Angeles and Eastern capitalists, is promoting a proposed railway direct from San Bernardino to San Diego via Hemet and Escondido.

Bridgeport & Danbury Electric Railway, Bridgeport, Conn.—Morton F. Plant, of New York and New London, has written this paper that he is in no way connected with this company, as stated in newspaper reports and reported in this paper for March 25, 1911.

Jacksonville (Fla.) Traction Company.—This company, which has been incorporated under the laws of Massachusetts with a capital stock of $1,500,000, will succeed the Jacksonville Electric Company. [E. R. J., March 11, '11.]

***Palatka, Fla.**—A company is being organized for the purpose of building a 20-mile electric railway between Palatka and Summer Haven.

***Citrus Southern Electric Railway, Sanford, Fla.**—It is reported that this company will award contracts this year for building its 45-mile railway between Sanford, Orlando and Kissimmee. T. K. Miller, Orlando, president; J. J. Brophy, Winter Park, vice-president and engineer.

Gary & Southern Traction Company, Crown Point, Ind.—This company has announced that the work of building the 12-mile extension from Gary to Crown Point will be resumed at once.

Evansville & Southern Indiana Traction Company, Evansville, Ind.—This company contemplates building its extension from Patoka to Vincennes during the present year. The line will bridge White River at Hazleton or Decker in order to get into Vincennes. Eventually the company will build as far north as Sullivan, Ind.

Indianapolis & Delphi Traction Company, Indianapolis, Ind.—This company advises that it is securing right-of-way and construction will begin as soon as preliminary arrangements have been completed on this proposed electric railway to connect Carmel and Delphi via Westfield, Sheridan, Frankfort, Forest, Burlington and Flora. The company's power station will be located at Indianapolis at present. Capital stock authorized, $10,000. Officers: Edward Thistlewaite, Sheridan, president; Morris E. Cox, Westfield, secretary, and Henry E. Smith, Indianapolis, general manager. [E. R. J., March 18, '11.]

South Bend, Richmond & Southeastern Traction Company, Richmond, Ind.—This company is considering plans to build an electric railway to connect Richmond, Liberty, Union City, Brownsville, Brookville and Harrison. Among those interested are F. C. Charles, Chas. W. Jordan, A. Jenkins, A. H. Bartel, B. B. Johnson and Paul Comstock. [E. R. J., Dec. 31, '11.]

Chicago, South Bend & Northern Indiana Railway, South Bend, Ind.—This company will shortly begin work on extensive improvements on its lines in South Bend. The directors at their annual meeting provided for these improvements. The principal lines will be double-tracked and a new transfer center established, which will materially assist in relieving the congestion at the interurban station.

***Southeastern Interurban Railway, Vincennes, Ind.**—This company, it is said, will award contracts for the construction of its proposed electric railway from Vincennes to Jasper as soon as the surveys are completed. George B. Hazleton, Vincennes, president.

Forest City & Mason City Railway, Forest City, Ia.—This company has completed preliminary arrangements and will award contracts on May 1 for building this 30-mile electric railway between Mason City and Forest City via Fertile. A. L. Sherrin, Watertown, S. D., president. [E. R. J., March 18, '11.]

Fort Dodge, Des Moines & Southern Railroad, Fort Dodge, Ia.—Work will be begun at once by this company to build an extension from Lundgren to Lehigh. From Lehigh to Webster City the company will use the tracks of the old Crooked Creek Railroad, which it is electrifying. When this new line is completed the company will establish direct service between Webster City, Lehigh and Des Moines.

Wichita Railroad & Light Company, Wichita, Kan.—Plans are being made by this company to build an extension from Wichita to Hutchinson, through Burrton and Halstead and extending along the south side of the Santa Fe line.

***Brandon, Man.**—James D. McGregor, Brandon, has written the Council stating that he was authorized, on behalf of an English company, to make a proposition to finance and build the proposed street railway, upon the basis that after all expenses of operation of plant and interest on the cost were paid the profit would be divided between the city and company.

Springfield & Western Railroad, Springfield, Mo.—This company advises that it has completed its preliminary surveys between Springfield and Joplin. This is part of a plan to build a 90-mile electric railway to connect Springfield, Joplin, Paris Springs, Mount Vernon, Monett, Pierce City, Wentworth, Plano and Doamond. M. M. Hollenback, Springfield, chief engineer. [E. R. J., Dec. 10, '10.]

United Traction Company, Albany, N. Y.—The Public Service Commission, Second District, has received a petition from this company asking for permission to construct a double track on Hudson Avenue, between Grand and South Pearl Streets, in Albany, also to construct an additional track on Hamilton Street between Dove and Phillip Streets.

***Dartmouth, N. S.**—A. C. Pyke and Robert Stanford are said to be interested in the promotion of an electric railway in Dartmouth out to Cow Bay. Application for a charter will soon be made.

Illinois Central Electric Railway, Canton, Ohio.—This company will receive bids for constructing a 7-mile extension from Norris to Farmington.

Cleveland, Alliance & Mahoning Valley Railroad, Cleveland, Ohio.—Carlin & Company, Chicago, have been awarded the contract by this company to build the roadbed and bridges of its proposed 25-mile electric railway to connect Cleveland, Alliance and Mahoning. Construction will begin at once. [E. R. J., April 1, '11.]

Ottawa, Smith's Falls & Kingston Electric Railway, Ottawa, Ont.—This company is making preliminary arrangements for building its proposed electric railway from Ottawa, via Manotick, Kars, North Rideau, Merrickville, Kilmarnock, to Smith's Falls. From here a branch line is projected to Lenark village, through Perth. The road crosses the Rideau here and runs through Lombardy, Portland, Elgin, Morton, Seeley's Bay, Brewer's Mills, to Kingston. F. A. Heney, Westboro, is interested. [E. R. J., Nov. 26, '10.]

Mount Hood Railway & Power Company, Portland Ore.—This company has completed and placed in operation its 12-mile extension between the Troutdale branch and Lusteds. Another contract for 10 miles of grading and construction has been let, to extend beyond Lusteds to Sandy.

Ephrata & Lebanon Street Railway, Ephrata, Pa.—All rights-of-way have been secured and it is said that construction will soon begin on this 23-mile electric railway to connect Lebanon and Ephrata via Iowa, Reistville, Schaefferstown, Kleinfeltersville, Hopeland, Clay and Lincoln. George D. Krause, Lebanon, president. [E. R. J., Sept. 17, '10.]

Southern Cambria Railway, Johnstown, Pa.—This company is grading its extension to Ebensburg, a distance of 10.85 miles.

Lock Haven & Jersey Shore Railroad, Lock Haven, Pa.—This company advises that engineers are now at work locating the route of its proposed 12-mile electric railway to connect Lock Haven, Jersey Shore, Avis, Dunstable, Charleston, Lock Port and Woolrich. The power station will be located in North Fork. Officers: L. M. Patterson, Lock Haven, president; C. E. Covert, Harrisburg, secretary; W. Harry Baker, Harrisburg, treasurer, and George Roberts, Lock Haven, chief engineer. [E. R. J., April 1, '11.]

Montgomery County Rapid Transit Company, Norristown, Pa.—This company is to extend its line from Skippack through the Perkiomen Valley to Schwenksville, Green Lane and Pennsburg, instead of through the North Penn Valley.

Allegheny & Northwestern Railroad, Philadelphia, Pa.—Construction on this 21-mile electric railway to connect Evans City and Harmarville via Mars, Valencia and Bakerstown, will be resumed this month.

Reading (Pa.) Transit Company.—This company proposes to ask permission to build two tracks on the new Penn Street bridge and to extend them to Wyomissing. There is also a rumor that a branch will be built from a point on the Mohnton line to connect with the Womelsdorf road in the vicinity of Wyomissing.

Philadelphia & Western Railroad, Upper Darby, Pa.—This company has contracted with the John A. Kelly Company, Philadelphia, Pa., to prepare the grade for the construction of a branch from the western end of its present line to a point in the main line of the Pennsylvania Railroad between Strafford and Devon.

Tioga Traction Company, Wellsboro, Pa.—James F. Fisher, Williamsport, is making surveys from Wellsboro to Mansfield, a distance of 15 miles, for this proposed electric railway to connect Wellsboro, Middlebury, Chatham, Covington and Mansfield. George F. Keagle, Avis, general manager. [E. R. J., March 11, '11.]

***Bristol (Tenn.) Belt Line.**—This company is planning the electrification of a line from Bristol to Big Creek Park, a distance of 10 miles.

Grand Belt Interurban Railway, Gallatin, Tenn.—This company advises that construction will begin as soon as financial backing has been secured for this 30-mile electric railway to connect Nashville, Goodlettsville and Gallatin. Capital stock authorized, $50,000. Bonds authorized, $500,000. Officers: C. H. Fidler, Gallatin, president, and S. R. Lewis, Gallatin, secretary and treasurer. [E. R. J., April 9, '10.]

***Henderson, Tenn.**—William Lee, J. W. Stewart, Henderson; N. B. Hardman and L. P. Jones, Sardis, plan to build an electric railway to extend from Henderson or Jackson and running east to some point on the Tennessee River, thence up the river to Savannah.

Trinity Valley Traction Company, Dallas, Tex.—This company advises that surveys have been completed and all local details adjusted, and plans for the construction have been adopted. The company expects to be in the market during the summer and fall for the necessary construction materials. This 118-mile electric railway will connect Dallas, Waxahachie, Ennis, Corsicana and Palestine. W. W. Clopton, Corsicana, secretary. [E. R. J., Nov. 19, '10.]

Cache County Amusement Company, Logan, Utah.—This company advises that construction will begin about July 1 on this 50-mile electric railway to connect Preston, Idaho, Franklin, Richmond, Lewiston, Smithfield, Hyde Park, Greenville, Logan, Providence, Millville, Hyrum, Wellsville and Paradise. No contracts have been awarded as yet. The power station and repair shops will be located at Logan. Headquarters, Logan. Capital stock authorized, $100,000; capital stock issued, $57,000. Officers: Job White, Salt Lake City, president; J. W. Wiscomb, vice-president; W. J. Phillips, Salt Lake City, secretary, and Leo Nielson, Logan, treasurer. [E. R. J., Oct. 15, '10.]

Graham (Va.) Electric Railway.—This company advises that construction will begin within 18 months on its proposed railway in Graham. The company will furnish power for lighting purposes. Capital stock authorized, $50,000. J. F. Dudley, Graham, president. [E. R. J., March 18, '11.]

Norfolk & Portsmouth Traction Company, Norfolk, Va.—This company is considering plans for building a mile extension from Powhatan Avenue and Forty-third Street, Norfolk, to Tanner's Creek, and extending its Ocean View line about 2 miles to East Ocean View.

Bellingham-Skagit Railway, Bellingham, Wash.—The Stone & Webster Engineering Corporation has begun the construction of this 60-mile electric railway to connect Bellingham, Sedro, Woolley, Burlington, La Conner and Mount Vernon. Charles M. Drummond, president. [E. R. J., Jan. 28, '11.]

SHOPS AND BUILDINGS

Los Angeles & Redondo Railway, Los Angeles, Cal.—This company will enlarge its car house at Redondo Beach to accommodate not less than 150 passenger cars. At present the capacity of the car house is 30 cars. The shops will be removed to new quarters.

Southern Pacific Railroad, Los Angeles, Cal.—This company will build a series of new stations in North Berkeley, Northbrae, Albany and West Berkeley, according to plans for the new electric loop service which will be in operation this fall. A union station may be built at Hopkins Street terminal in Northbrae. A second station will be built at once at the corner of Solano Street, near Colusa Avenue, the contract having been awarded to R. Trost. The structure will cost $16,872. A third station will be located in Main Street, near San Pablo Avenue, Albany. In West Berkeley a series of stations will be built at the principal cross streets. One at Dwight Way, another at Adeline and Shuttuck Avenue and one near University Avenue.

Rockford & Interurban Railway, Rockford, Ill.—This company has moved all its machinery from the local repair shops to its new shops in Rockford. In the future all repair work will be done here.

Tri-City Railway & Light Company, Davenport, Ia.—This company is said to be considering plans for building a car house and repair shops in Davenport, at Thirty-fifth Street and Fifth Avenue. The cost is estimated to be about $80,000.

Ogdensburg (N. Y.) Street Railway.—It is reported that this company has awarded the contract to John A. Wert for constructing a new carhouse in Ogdensburg. The company's old carhouse was recently destroyed by fire.

Galveston-Houston Electric Railway, Houston, Tex.—Work on the plans for a carhouse to be erected by this company on Texas Avenue, in Houston, are about complete, and work will be begun within the next four weeks. The structure will be built so as to admit of improvements to it later in the way of extensions and additions. It is expected to build ultimately a large passenger station and office adjoining this carhouse.

POWER HOUSES AND SUBSTATIONS

Rockford & Interurban Railway, Rockford, Ill.—This company plans to build a power plant at Rockford.

Fort Dodge, Des Moines & Southern Railroad, Fort Dodge, Ia.—Plans are being made by this company to build a power plant in Fraser.

Elmira, Corning & Waverly Railway, Waverly, N. Y.—This company will begin work upon the new substation to be built at Big Flats this month. Power will be received there through lines from the local public service company's power house.

Galt, Preston & Hespeler Street Railway Company, Ltd., Galt, Ont.—This company has arranged for a supply of power from the Hydroelectric Power Commission in Preston.

Portland Railway, Light & Power Company, Portland, Ore.—This company will construct a building adjacent to its new steam plant which has just been finished on the Clackamas River in Portland. This structure will be 35 ft. x 100 ft., and is from two to three stories high. Its use is for a transmission transformer station. Work will be begun soon. The cost is estimated to be about $20,000.

Warren & Jamestown Street Railway, Warren, Pa.—This company has purchased a site in Stillwater on which it will build a transformer station. The structure will be 28x38 ft. It will also be equipped with a waiting room for passengers.

Newport News & Old Point Railway & Electric Company, Newport News, Va.—This company will improve its power station in accordance with the suggestions made by E. W. Trafford in his report to the State Corporation Commission.

Milwaukee Electric Railway & Light Company, Milwaukee, Wis.—This company will build in the near future a new power house in Racine. The structure will be 1 story, of brick, concrete and steel construction.

Manufactures & Supplies

ROLLING STOCK

Radford (Va.) Water Power Company expects to purchase one or two second-hand closed cars.

United Traction Street Railway, DuBois, Pa., has ordered two Brill 27-G1 trucks from the G. C. Kuhlman Car Company.

Northampton (Mass.) Street Railway has ordered one 14-bench open car body from the Wason Manufacturing Company.

Indianapolis, Crawfordsville & Western Railway, Indianapolis, Ind., is receiving bids for four large interurban passenger trail cars.

San Antonio (Texas) Traction Company has ordered 10 28-ft. 10-in. car bodies, mounted on Brill 27-G1 trucks from the American Car Company.

Arkansas Valley Railway, Wichita, Kan., has ordered five 46-ft. interurban cars, mounted on St. Louis No. 23-B trucks, from the St. Louis Car Company.

Vallejo & Northern Railway, Vallejo, Cal., has ordered one combination open and closed car, mounted on St. Louis No. 47 trucks, from the St. Louis Car Company.

British Columbia Electric Railway, Vancouver, B. C., has ordered three Kuhlman interurban cars mounted on Brill 27-MCB-3 trucks, through Pierson, Roeding & Company.

Third Avenue Railroad, New York, N. Y., has ordered 35 passenger cars for storage battery operation on some of its downtown horse-car lines, from The J. G. Brill Company.

Toledo & Chicago Interurban Railway, Kendallville, Ind., has purchased two 40-ft. trailer freight cars equipped with automatic air brakes and M.C.B. radial couplers, from the Calumet Car Company.

Sand Springs Interurban Railway, Tulsa, Okla., has ordered one 41-ft. baggage and express car, mounted on Brill 57-D trail trucks and two 37-ft. closed trail cars, mounted on Brill 57-D trail trucks from the Danville Car Company.

Utica & Mohawk Valley Railway, Utica, N. Y., has ordered eight GE-219 quadruple-motor with single-end control equipments, and four GE-210 quadruple motor equipments, with single-end type M control, from the General Electric Company.

Salt Lake & Ogden Railway, Salt Lake City, Utah, has ordered through H. A. Strauss, consulting engineer, Chicago, Ill., one 30-ton electric locomotive to be built by the McGuire-Cummings Manufacturing Company. It is designed to handle 400 tons trailing load at 17.5 m.p.h., on an average rising gradient of 0.7 per cent. The locomotive will be of all-steel construction, equipped with four 100-hp, 700-volt G.E. interpole d.c. motors with forced ventilation and double-end multiple-unit control, with Westinghouse combined straight and automatic air brakes.

Pittsburgh, McKeesport & Westmoreland Railway, McKeesport, Pa., noted in the Electric Railway Journal of March 5, 1911, as having ordered two cars from the Cincinnati Car Company, has specified the following details for these cars:

Type	Double truck	Curtain material	Pantasote
Length of body	29 ft.	Destination signs	dash
Over vestibule	34 ft. 6 in.	Heating system	Cons.
Width over posts	8 ft.	Headlights	GE arc
Sill to trolley base	8 ft. 6 in.	Motors	West. 4
Body	steel	Push button signal	bat. sys.
Interior trim	cherry	Roofs	turtleback
Underframe	composite	Sanders	Cincinnati
Bolsters	steel	Sash fixtures	Dayton
Bumpers	angle iron	Seating material	rattan
Car trimmings	bronze	Trolley wheels	Standard
Couplers	Cincinnati	Trucks	Standard
Curtain fixtures	Forsyth		

Boise (Idaho) Railroad, noted in the Electric Railway Journal of March 25, 1911, as having ordered two closed motor cars through Henry Levis & Company, from The J. G. Brill Company, has specified the following details for these cars:

Seating capacity	44	Curtain material	Pantasote
Weight, body	16,000 lb.	Gongs	Dedenda
Length of body	30 ft. 8 in.	Hand brakes	Brill 12-in.
Over vestibule	40 ft. 8 in.	Registers	Ohmer
Width over sills	7 ft. 9½ in.	Roofs	Monitor
Over posts at belt	7 ft. 11 in.	Sanders	Brill "Dumpit"
Sill to trolley b'ds	11 ft 6 in.	Seats	Brill "Winner"
Body	wood	Seating material	rattan
Interior trim	ash	Springs	Brill
Underframe	wood	Step	double
Bumpers	Brill	Trolley base	U. S. Stand.
Car trimmings	bronze	Trucks, type	Brill 27 G-1
Couplers	Brill	Wheels	33-in. cast iron
Curtain fixtures	Cur. Sup. Co.		

Greenville Railway & Light Company, Greenville, Tex., noted in the Electric Railway Journal of March 25, 1911, as having ordered 7 cars from the Cincinnati Car Company, has specified the following details for these cars:

Type	single truck	Destination signs	Hunter
Length of body	21 ft.	Fenders	Eclipse
Over vestibule	31 ft.	Gongs	12 in.
Width over posts	8 ft. 2 in.	Hand brakes	Peacock
Sill to trolley base	9 ft.	Heating system	Cons.
Body	wood	Headlights	Crouse arc
Interior trim	mahogany	Push button signal	Cons. buz.
Underframe	composite	Roofs	Monitor
Car trimmings	bronze	Sanders	Cin. Car Co.
Couplers	Cinti.	Seats	H. & K.
Curtain fixtures	Forsyth	Seating material	slats
Curtain material	Crown	Trucks	Standard

TRADE NOTES

Ackley Brake Company, New York, N. Y., has received an order from New Zealand for 20 Ackley adjustable brakes.

Victor W. Ellet has resigned as general foreman of the Chicago, Rock Island & Pacific Railroad to accept a position with the Hunt-Spiller Manufacturing Corporation, Boston, Mass.

Perry Ventilator Corporation, New Bedford, Mass., has received an order from the Pittsburgh Railways to supply ventilators for 50 new cars which are being built by the Pressed Steel Car Company.

Wonham, Sanger & Bates, New York, N. Y., have received orders from the Chicago Railways, the East St. Louis & Suburban Railway and the Philadelphia Rapid Transit Company for "Trotter" accelerometers.

J. S. Joseph has severed his connection as erecting engineer for W. A. Day & Company, Chicago, Ill., and has opened an office at 207 Union Bank Building, Chicago, Ill., as manufacturers' agent, handling contractors' equipment and supplies, locomotive cranes and grab buckets.

Barrett Manufacturing Company, Chicago, Ill., has appointed E. J. Caldwell railway representative of the company. Mr. Caldwell for the past 12 years has been connected with the Illinois Central Railroad. During the last six years he has been private secretary to the president.

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa., has declared the regular quarterly dividend of 1¾ per cent on its preferred stock, payable April 15, 1911. The books close April 5, 1911, and reopen April 17, 1911. The remaining dividend due on the assenting preferred stock of 1¾ per cent will also be paid on April 15, 1911.

Buffalo Foundry & Machine Company, Buffalo, N. Y., has recently made an exceptionally large bronze drum casting. The drum is 12 ft. long and 5 ft. in diameter, and is to be used as the drying surface in a vacuum rotary drum dryer. It required 16,000 lbs. of metal to pour the casting, and on account of this large quantity it was necessary to melt the metal in a 48-in. cupola.

Nachod Signal Company, Philadelphia, Pa., announces that it has recently received orders for automatic signals from the Illinois Traction System, East St. Louis & Suburban Railway, Louisville Railway, Southern Wisconsin Railway, St. Joseph Railway, Light, Heat & Power Company; St. Joseph & Savannah Construction Company and the Winona Interurban Railway.

Dailey Construction Company, Evansville, Ind., has been incorporated to do a general construction business, making a specialty of grading electric and steam railway road beds and laying tracks on the same, building bridges, trestles and culverts, constructing viaducts, subways, terminals, etc. T. J. Dailey, Perth Amboy, N. J.; T. J. Galley, Beeville, Texas, and H. E. Myers, South Bend, Ind., are the incorporators.

Electric Service Supplies Company, Philadelphia, Pa., states that it has received large orders for Garton-Daniels lightning arresters from the Rockford & Interurban Railway, Rockford, Ill.; St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo.; Chicago Railways, Chicago, Ill.; Birmingham Railway, Light & Power Company, Birmingham, Ala.; Stark Electric Railroad, Alliance, Ohio, and many others.

Canadian Westinghouse Company, Hamilton, Ont., has issued its annual report for the fiscal year ended Dec. 31, 1910, which shows an increase of 40 per cent in business over 1909. The net earnings for the year were $697,393. After the payment of 7 per cent dividends on the $4,376,600 capital stock outstanding there was carried to reserve and written off $200,000. At the close of the year the company's total reserve was $1,176,000.

Grand Rapids Catenary Company, Grand Rapids, Mich., has been formed to put on the market the catenary bridge construction with wooden poles designed by A. C. Sekell, engineer of the Grand Rapids, Hastings & Battle Creek Interurban Railway. A description of this system of construction appeared in the Electric Railway Journal of March 18, 1911. The company has offices at 432 Houseman Building, Grand Rapids.

Baldwin Locomotive Works, Philadelphia, Pa., has issued a report for the year ended Dec. 31, 1910. After paying dividends there was a surplus for the year of $1,490,680. The total sales amounted to $29,057,998, with a building cost of $25,097,273, leaving a manufacturing profit of $3,360,725. Receipts from other sources amounted to $1,007,778, making a gross profit of $4,368,504. The expenditures for maintenance of plant, etc., amounted to $1,851,822, leaving a net profit of $2,516,680.

Buckeye Manufacturing Company, Anderson, Ind., which has recently completed extensive additions to its plant, is now manufacturing a 35-passenger capacity railway motor car, driven by a 100-hp Lambert friction-drive gasoline motor. This car is being built under the supervision of W. E. Harrington, of the Railway Motor Car Corporation, the designer, and will be operated on the Railway Valley Railroad at an early date. The Railway Motor Car Corporation, Philadelphia, Pa., is the exclusive sales agent for this type of car.

ADVERTISING LITERATURE

Steel City Electric Company, Pittsburgh, Pa., has issued preliminary bulletin No. D, describing the "Steel City" outlet boxes.

Bruce-Macbeth Engine Company, Cleveland, Ohio, has issued a catalog illustrating and describing the "Bruce-Macbeth" gas engines.

Ideal Electric & Manufacturing Company, Mansfield, Ohio, has issued Bulletin 1031 on "Squirrel-Cage Polyphase Induction Motors."

Highway Improvement News has been published for April, 1911, by the manufacturers of American ingot-iron corrugated culverts.

Comstock Manufacturing Company, Wilkes-Barre, Pa., has issued a folder describing the "Comstock" metallic quick-acting coil former.

Western Electric Company, New York, N. Y., is distributing Bulletin No. 1105 on "Cable-Forming Boards for Inter-Phone Installations."

Randolph Insulator Company, Newark, N. J., has published a booklet on "Rico" third-rail and suspension insulators and "Shaw" abnormal potential dischargers.

J. W. Paxson Company, Philadelphia, Pa., has issued Bulletin No. 21 on wheelbarrows and trucks, suitable for foundries, machine shops, coal and sand handlers, contractors, etc.

James G. Wilson Manufacturing Company, Norfolk, Va., in Catalog No. 34, on "Rolling Doors and Shutters," illustrates several buildings and docks equipped with these devices.

Nachod Signal Company, Philadelphia, Pa., has reprinted in pamphlet form an article which appeared in the *Signal Engineer* on the "Automatic Block Signal System for Electric Railways."

A. B. Sanders & Company, Philadelphia, Pa., describe the large amount of electric rolling stock and power machinery which they have on hand for immediate delivery in Circulars Nos. 100 and 101.

Sanitary Rag Company, Kalamazoo, Mich., has issued a postcard calling attention to the quality of the washed wiping cloths which are manufactured by the company and also to the exceptionally low price at which they are sold.

Best Manufacturing Company, Pittsburgh, Pa., has issued folders Nos. 101 and 102, giving standard tables of dimensions of valves, pipe fittings, bends, etc., and also giving price lists of flanges and flanged fittings.

Electrical Engineers' Equipment Company, Chicago, Ill., has issued Catalog No. 2, on "Electrical Fittings for Power Plants," containing illustrations and giving complete sizes and prices of different kinds of fittings.

Canton Culvert Company, Canton, Ohio, has prepared a catalog on "Acme" corrugated metal culverts, which contains several interesting articles and gives illustrations of culverts that have recently been put in place.

Stromberg-Carlson Telephone Manufacturing Company, Rochester, N. Y., has issued a folder illustrating and describing the "Mine-A-Phone" system. The folder also contains a list of a few users of the system and a price list of different types of telephones.

O. M. Edwards Company, Syracuse, N. Y., in Catalog E shows a complete line of car window fixtures. The catalog not only illustrates the various kinds of sash locks furnished, but also contains complete drawings, showing the application of fixtures to window openings.

Barrett Manufacturing Company, New York, N. Y., has issued a booklet entitled "Modern Roads—Their Construction and Maintenance." The booklet describes and contains illustrations of roads that have been treated with "Tarvia," and the way in which it is applied.

B. F. Sturtevant Company, Hyde Park, Mass., has published in Bulletin No. 187 a reprint from an article in *Power and the Engineer* on "Economical Fire Room Methods," by F. R. Low, together with a short section upon the apparatus responsible for the results and other interesting information.

Joseph Dixon Crucible Company, Jersey City, N. J., has published "Graphite" for April, 1911. It contains articles on "Transmission Towers," "State Bridge at Danville, Pa.," "The Enduring Crucible," "Why Amorphous Graphite Balls Up," "Oil vs. Graphite in Boilers," "Machine Molding vs. Hand Molding," "The Real Cost of Painting."

MacGovern, Archer & Company, New York, N. Y., have issued Bulletin No. 22 for April, 1911. The bulletin, which is the first issued devoted entirely to cars and car equipment, contains specifications and illustrations of a large number of cars on hand for immediate delivery, and also a list of controllers, motors and car equipment.

Heath & Milligan Manufacturing Company, Chicago, Ill., has issued the March, 1911, number of "Co-operation and Expansion." The publication contains interesting articles on "Increasing Spring Sales," "Pure Paint," "Substitutes," "An Attractive Opportunity to Get Aggressive Co-operation," "Meeting the Situation" and "Protecting Dilapidated Brick Buildings."

Goldschmidt Thermit Company, New York, N. Y., in its publication, "Reactions," for the first quarter of 1911 prints among others illustrated articles on "Improving the Quality of Thermit Steel," "Large Crank-Shaft Repairs," "Joining Trolley Rails on Bridges," "Tightening Stays in Iron Structures," "Making Small Castings of Thermit Steel," "Welding Cast Iron," "Alloys of Manganese," and "Around the Railroad Shops."

Electric Service Supplies Company, Philadelphia, Pa., has issued Catalog No. 4, on "Protected" rail bonds and tools, which is got up very attractively. It contains illustrations of rail bonds for both track and third-rail use which are accompanied by descriptive articles and price lists. The catalog also contains descriptions and illustrations of several different types of "Rail Bond Compressors," "Rail Bond Punches," "Hydraulic Bonding Tools," "Rail Facing Tools," "Bond Drilling Templets" and "Rail Bond Testing Sets."