

# Electric Railway Journal

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### ELEVATED TFR- MINALS FOR IN- TERURBAN LINES

One of the chief obstacles to rapid transit service on interurban railways is the delays encountered in the streets of the terminal cities, and in most cities these delays are bound to increase in the future rather than decrease. Relief from a situation of this kind is being sought in Los Angeles by the Pacific Electric Railway, which is asking permission to construct an elevated road from its present passenger station past the more congested streets. If obtained, most of the interurban cars would use this elevated structure in reaching the downtown terminal. The construction of elevated roads is not as popular now with railway companies as it once was, owing to the high assessments for damages to abutting property, because of the noise and obstruction of light, and they are looked upon with disfavor also by some municipalities because of their supposed unsightly appearance. Both of these arguments against their construction are undoubtedly correct when applied to the older type of elevated roads with which most people are familiar because of its existence in New York and Chicago. The same arguments do not apply, however, to the elevated railways built during the last ten years, like those in Paris and Berlin, where an effort has been made to treat the structure in an artistic way and to introduce special means for deadening the noise. In consequence roads of this kind have been installed in some of the best residential sections of the two European capitals mentioned. Even at best, however, elevated railways are expensive, and it is safe to say that their cost is prohibitive for all interurban roads except those of large traffic, and that it would not be practicable to build them for any great distance except in the very largest cities. Nevertheless, they can be constructed for about one-fifth the cost of a subway, and they do offer an alternative for surface traction where a subway would be entirely out of the question.

### FINANCING UNEXPECTED LOSSES

The terrible floods from which several of the most prosperous states in this country are now just emerging furnish another example of the hazards to which public utility enterprises, as investments, are subjected. It is a common presumption on the part of many persons, when the affairs of a public utility are running smoothly, that nothing serious of a financial character can occur to affect its prosperity. Its service, they argue, must be patronized by the people who live in that community, and its profits are so reasonably certain that the companies should be limited to a bare margin above that required to earn the legal rate of interest upon the investment in them. Then comes some such catastrophe as the San Francisco earthquake, the Baltimore fire or the Ohio and Indiana floods, wrecking property, destroying the accumulated investment of years and inflicting losses directly and through loss of business which it will take the profits of many years to repay. We have no doubt that if some of our regulating authorities had had presented to their attention during the middle of last month the public utilities in what is now the devastated district they would have pooh-poohed the idea that any serious disaster could come to them through natural causes. Their business might fairly be assumed to be as secure as government bonds, and their rates should be regulated accordingly. It is true that disasters of this kind cannot be predicted; that is to say, their exact nature and the time of their occurrence cannot be foreseen. But while fires, earthquakes and floods fortunately are not common, they do happen, and there are sufficient instances of their occurrence to render them, like strikes and other contingencies which might be mentioned, a real hazard in electric railway operation and one which must be taken into consideration when judgment is passed upon what constitutes a "reasonable return" for a public utility.

### THE CAUSES OF THE RECENT FLOODS

Now that the work of repairing the damage from the recent floods in Ohio and Indiana is well under way, it is possible to survey the conditions leading up to them and to draw conclusions regarding the possible causes. It seems that, regardless of early reports of bursting reservoirs, the floods were produced primarily by an extraordinary rainfall, which in the State of Ohio exceeded one-third of the entire average annual precipitation. The storm, strangely enough, appeared to concentrate its effect between Bellefontaine and Marion, Ohio, extending to the east and west surprisingly close to the line of the watershed of the State from which the rivers flow north into Lake Erie and south into the Ohio River. According to a rainfall map published in the current issue of the *Engineering Record*, the precipitation in this region reached the unprecedented total of 11 in. during the four days between March 23 and



March 27, so that the rivers running to every portion of the State were flooded at their very sources. Judging from the most recent reports, it is safe to say that practically no dams failed with serious results. Several minor failures occurred, but these generally came after the period of highest waters in the rivers leading from them. Several of the great reservoirs in Ohio were, however, filled beyond their spillway capacities, and their banks were overtopped by waves, a serious condition if it exists for a sufficiently long period. In some cases the embankments of earth were washed out for various lengths, and a considerable amount of water was discharged on to the surrounding country, although these overflows were in no case a primary cause of the disaster. A suggestion has been made that there should be some supervision of the level at which reservoirs are held during the periods when heavy rains may be expected, and it is said that the large storage reservoir in the Scioto River above Columbus, Ohio, aided materially in lessening the flood at that city. In fact, it is pointed out that if the large reservoirs of central Ohio had been drawn down previous to the rains, each one of them would have stored practically the entire run-off from its drainage area.

#### INDIRECT LIGHTING ON LIMITED TRAINS

With the steady advances which illuminating engineering has been making toward the complete elimination of glare, it was to be expected that the indirect system of lighting would sooner or later receive a trial in railway service of the highest class. This is now the case, as the system has been placed in operation on the five-hour "Merchants' Limited" trains of the New Haven company between New York and Boston and on some of the Santa Fé trains out of Chicago, but has been confined to parlor, observation or dining cars. The fixtures are of the inverted opaque type, each carrying either one 100-watt tungsten lamp or three 50-watt lamps immediately above a porcelain reflecting bowl throwing the light upon the monitor ceiling, from which it is reflected and diffused throughout the car. The intensity of illumination sought is about  $4\frac{1}{2}$  ft.-candles on a working plane 33 in. above the floor. The expenditure of the same energy in 25-watt or 40-watt lamps with direct, diffused lighting would unquestionably flood the car with illumination that would do away entirely with the soft "twilight effect" now observed, but it is equally certain that glare would exist unless inefficient diffusing shades or globes were used.

Whether there are situations in electric railway work to justify this luxurious system of lighting is a question, but the matter is worth consideration. Certainly the cost for illumination per candle-power-hour should be less on electric roads, with their system of direct supply, than on the steam roads where an axle lighting generator is used. Whether the opaque type of fixture will meet the ultimate conditions remains to be seen. In most installations of indirect lighting it is a common experience to encounter the criticisms of the user against the absence of a visible light source, and in some classes of restaurant work a combination system is being used in which a portion of the fixture is translucent. It is also a question

whether 150 watts per fixture is not better practice than the use of 100 watts, judging from the observation of passengers on these trains, even though newspaper print can easily be read with the indirect reflected light from the 100-watt equipments. The tungsten lamp is certainly a factor to be reckoned with in the most advanced car lighting of the present time, and its adaptability to ornamental service with diffusing and reflecting apparatus is almost as advantageous as its high intrinsic efficiency.

#### BRIDGE AND CULVERT INSPECTION

Largely upon the degree of care with which bridges and culverts are maintained depends the safety of operation as well as the continuity of service, and the quality of maintenance, in turn, is dependent almost wholly upon rigid periodical inspections. The value of such inspections, however, must necessarily be based upon the experience of the inspector with methods of maintenance as well as upon his ability to forecast dangerous conditions far enough in advance to permit repairs to be made before disaster occurs. At least two accurate inspections are necessary each year, one in the fall to determine the maintenance schedule for the following summer and one in the spring to determine which structures need attention first.

Monthly inspections should also be made by the section foremen so that unforeseen conditions may be promptly discovered. A section foreman of average intelligence is competent to make such inspections, particularly if he has had some instruction from an experienced bridge inspector, but important structures showing conditions which may become serious at any time should be watched carefully by the most competent man available.

The inspection by the trained bridgeman should not end with a report of structures needing immediate attention or repairs during the following year. A complete record of the condition of each bridge and culvert should be made on the ground, and a copy of this should be forwarded to the department head for comparison with previous inspection reports. The purpose of this comparison is to determine the rapidity with which any defect advances, and it enables officials to arrive at conclusions which are not evident on the ground. Items which should be noted on inspection reports include the number and condition of cracked pipes in culverts, the depth of underscour around masonry and pipe ends, the depth of decay in piling and the settling or lateral movement of pile bents due to shifting fills or faulty penetration.

The inspector's duties on the semi-annual inspection, the one which will form a basis for the following year's work, must necessarily be more thorough than the one which is made only to locate dangerous conditions. The former should include determination of the depth of decay in each member. This may be found by picking away portions of the decayed timber with an ordinary shoemaker's awl or an ice pick. The inspection of bridge ties or deck timber may be done with a light-weight pointed bar, which permits the inspector to do his work much more easily. To ascertain exact conditions around masonry footings soundings are necessary. This is also true of pipe ends where there is scour either due to the pipe flowing full at the upstream



end or on account of the existence of soft soil at the outlet.

Experience has shown that certain points on steel bridges show failures in the paint skin greatly in advance of the rest of the structure, namely, the upper horizontal surfaces such as the top flanges of stringers, floor beams and upper chords. By watching these points an experienced inspector may quickly draw conclusions as to the immediate necessity of painting steel structures. By attempting to swing the eye-bars laterally he is able to investigate the accuracy of adjustment in a truss and recommend taking up the slack or relieving overstrained members through the turnbuckles or by shims at the pins.

Prompt removal of drift is very important. Repeated floods, particularly at wooden trestles, will collect sufficient drift to dam the stream flow, which usually results in one of two things, destruction of the bridge or washed-out embankments at either end of the opening. Drift around wooden bridges during dry periods may easily be set ablaze by a match or cigar end thrown from a car, resulting in a destructive fire.

#### LOCOMOTIVE AND MOTOR CAR ACCELERATIONS ABROAD

In the several reports and discussions of the proposed electrification of the Berlin Stadtbahn no attention appears to have been given to the possible influence which a higher rate of acceleration may have on the present type of car and the method of loading and unloading it. As previously noted in these columns, it is the intention of the Prussian State Railways, which operates the Stadtbahn, to substitute electric locomotives for steam locomotives. This will permit the retention of the steam trail cars with practically no radical changes in body construction. These cars are of the swinging side-door type, and they have a narrow double-step running board which is not unlike that on the Narragansett type of open car used in this country.

In accordance with the usual European practice, the passengers open and close these doors themselves, although they are not supposed to do this while the train is in motion. One duty of the guard is to run along the platform to close all open doors on his way to the rear of the train. This leisurely procedure is possible because the rate of acceleration is only 0.38 m.p.h.p.s. The natural consequence is that the service of the Stadtbahn is very far from real rapid transit. It is proposed to increase the rate of acceleration to about 1 m.p.h.p.s. by employing one head and one rear electric locomotive per train. Even this rate is fully 0.5 m.p.h.p.s. less than that used on the Hamburg rapid transit system. It may be questioned, however, whether it will be possible with the old-time trailers to maintain safely the proposed acceleration of 1 m.p.h.p.s. It is true that the doors of the faster Hamburg cars are successfully manipulated by the passengers, but this is feasible because these doors are of the sliding type and the car floor is but a few inches higher than the station platforms and overlaps them.

Of course, the desire to electrify the Stadtbahn as cheaply as possible has resulted in the choice of electric locomotives rather than motor cars, but the ratio of traffic increase on this system makes it likely that motor cars will have to be chosen eventually in order to get the benefits of a still

higher acceleration with greater convenience and safety than can be afforded by locomotive operation. In fact, the increasing density of travel on the rapid transit lines of cities like Berlin, London and Paris indicates the early coming of the day when the present type of motor car will have to be altered so that it can be operated at the higher schedule speeds and with the cars that are already in use in this country.

#### CENTER-ENTRANCE CARS FOR BROOKLYN

Early last year the Brooklyn Rapid Transit System designed and equipped a center-entrance, low-step car with the avowed object of making that type its future standard for new equipment if practical operation demonstrated its superiority to the drop-platform type. This trial car was the result of some two years' study by the management, first in making a comprehensive survey of center-entrance cars in general and, second, in preparing in detail a type which would be particularly suitable for the needs of Brooklyn traffic. As the design took form, experienced representatives of all departments concerned in car operation were invited to criticise the different features from their individual standpoints so that the completed car would incorporate what they considered best. From the day that the car was placed on the street in public service, an elaborate record was kept of its speed and passenger-handling ability, of the effectiveness of the devices for ventilation, for the folding of cabs and seats when the direction was changed, for interlocking the center doors and control, for fare collection and for other matters pertinent to satisfactory operation. That these elaborate preliminaries were amply justified is proved by the fact that the 100 cars now under way embody the same fundamental features as the pioneer design. The changes in the folding cabs and seating, however, present examples of improvement in fittings due to patient experimenting with all kinds of combinations of doors, sashes and seating. Again, the addition of grab-irons for reaching the roof illustrates how the emergencies of real operation disclose minor omissions.

A striking point in connection with the new cars, which are described at length in this issue, is that they were assembled, from the skeleton up, in the shops of the Brooklyn Rapid Transit System. The railway company felt that inasmuch as this rolling stock was so great a departure from standard cars, its own shops should be the place to work out every detail and install every part of the equipment. The car illustrated in the article was the one on which were developed the order and method of operations which are to be followed in the equipment of the remaining ninety-nine cars. On this car also were tested out minor variations in seating, in signs and the like. The cars now at the shops are to be turned out at the rate of one a day, although this work comes at the season when many cars must be prepared for summer service. Widespread interest has already been shown in this design, but only those who have followed the evolution of the car from its inception can appreciate the amount of conscientious effort that the Brooklyn Rapid Transit System has expended to produce a car that embodies so many features advantageous to both the public and the company.



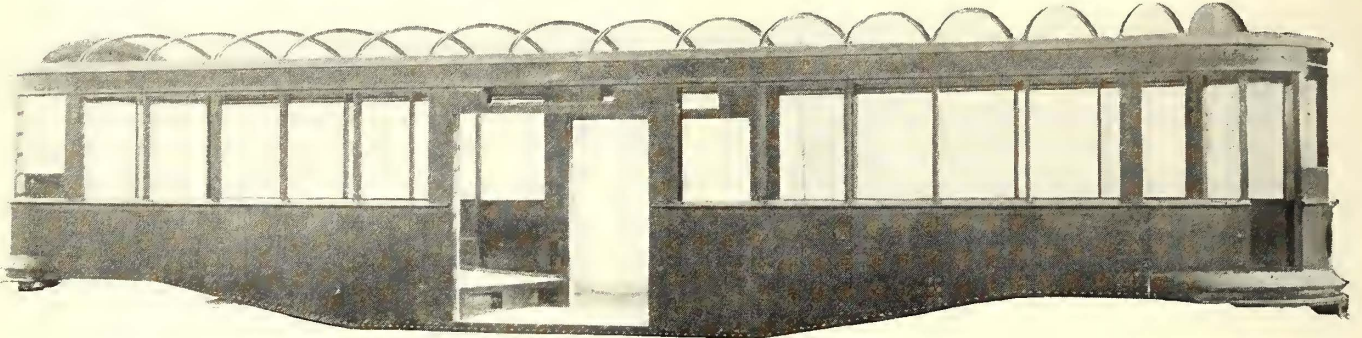
# Center-Entrance Cars for Brooklyn

Full Particulars Are Presented of the Construction and Equipment of 100 Center-Entrance Cars for the Brooklyn Rapid Transit Company—These Are Now Being Equipped in That Company's Shops

The Brooklyn Rapid Transit Company is now equipping at its Thirty-ninth Street shops 100 center-entrance cars. These cars, in general, are similar to the experimental car which was described in the *ELECTRIC RAILWAY JOURNAL* for March 30 and June 22, 1912. The cardinal features of design and construction have been changed very little, but important modifications were made in the motormen's cabs,

arranged to raise or drop according to location. The ends of the body have swinging sashes and roller curtains to form the motorman's cab, which is folded back when not in use to allow the application of suitable seats.

The principal dimensions are as follows: length over all, 45 ft. 6 in.; length over the end sheathing, 44 ft. 8 in.; length of the motorman's cab, 3 ft.; center to center of



Brooklyn Center-Entrance Car—Framing as Received at the Thirty-ninth Street Shops of the Brooklyn Rapid Transit Company

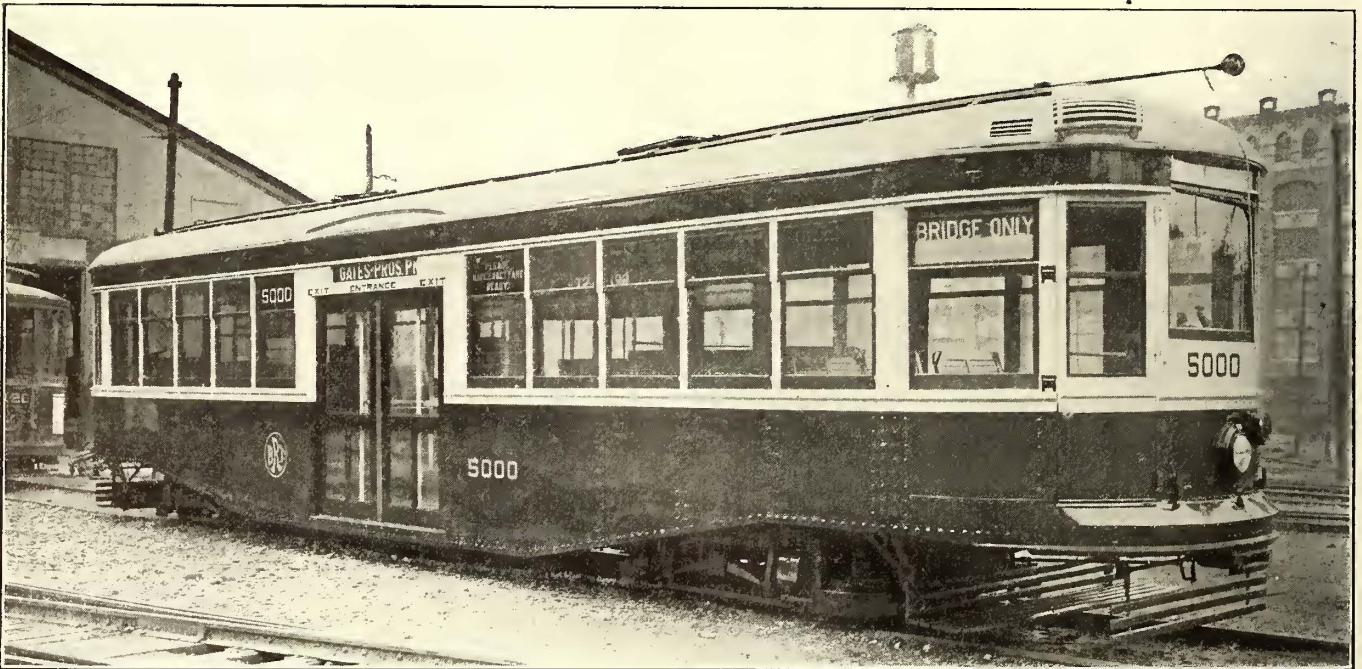
in the seating near the cabs and center doors, in ventilation, etc. The following paragraphs and the accompanying illustrations present full particulars of the new cars.

#### GENERAL DIMENSIONS AND FRAMING

This type may be described as a double-end, straight-sided body with low-step passenger entrance and two exits

bolsters, 24 ft. 8 in.; width over the side sheathing, 8 ft.  $3\frac{3}{16}$  in.; width over the belt rail, 8 ft.  $5\frac{1}{2}$  in.; width over the drip rail, 8 ft. 5 in., and height from the bottom of the sill to the top of the trolley board, 10 ft.  $2\frac{1}{4}$  in.

The car-body framing is of pressed steel, both welded and riveted. As received from The J. G. Brill Company



Brooklyn Center-Entrance Car—Side and End View of Car as Completed at the Thirty-ninth Street Shops of the Brooklyn Rapid Transit Company

located at the center of the car and arranged for collection of fare as the passenger enters. The car floor at this point is 14 in. above the rails at the threshold with 2 in. of ramp to the center. Inside the car, from the center platform sub-floor or well is a 10-in. riser to the center aisle on each side, this aisle having a ramp of 6 in. in 8 ft. 6 in. to the bolsters, from which points the floor is level. The sash is

for equipment at the Brooklyn Rapid Transit Company's shops, the framing illustrated in the accompanying half-tone weighed 8562 lb. This framing was designed with a factor of safety of five. Each side of the car forms a girder consisting of the side plates, belt rail, letterboard and side posts, all of which are riveted to each other, to the side sills and to the carlines. At the center of the car

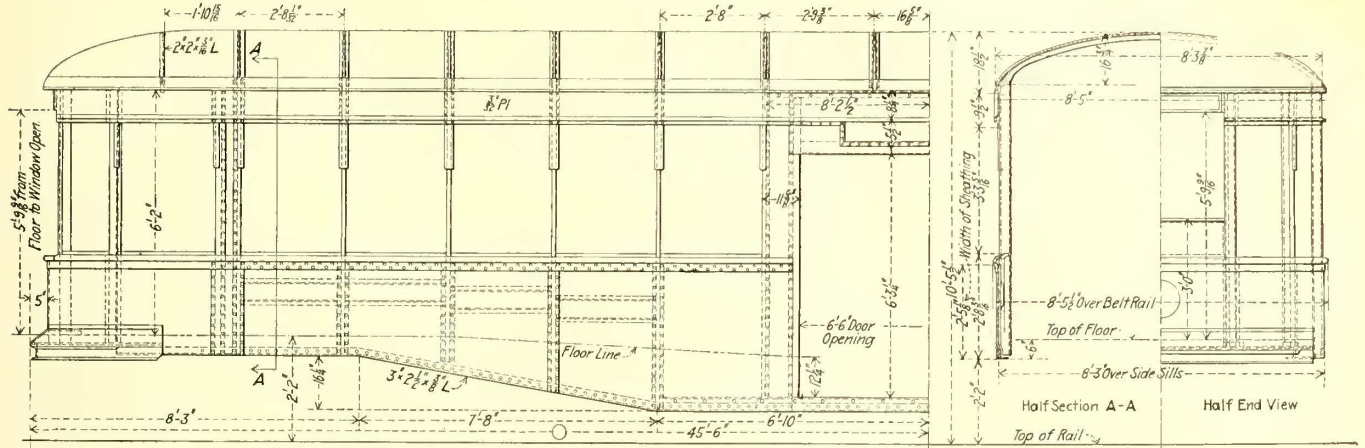


this side girder has a maximum depth of about 8 ft. The sides of the car below the window line and the letterboard sheathing are of 3/32-in. plate except at the ends, which are 1/16 in. thick.

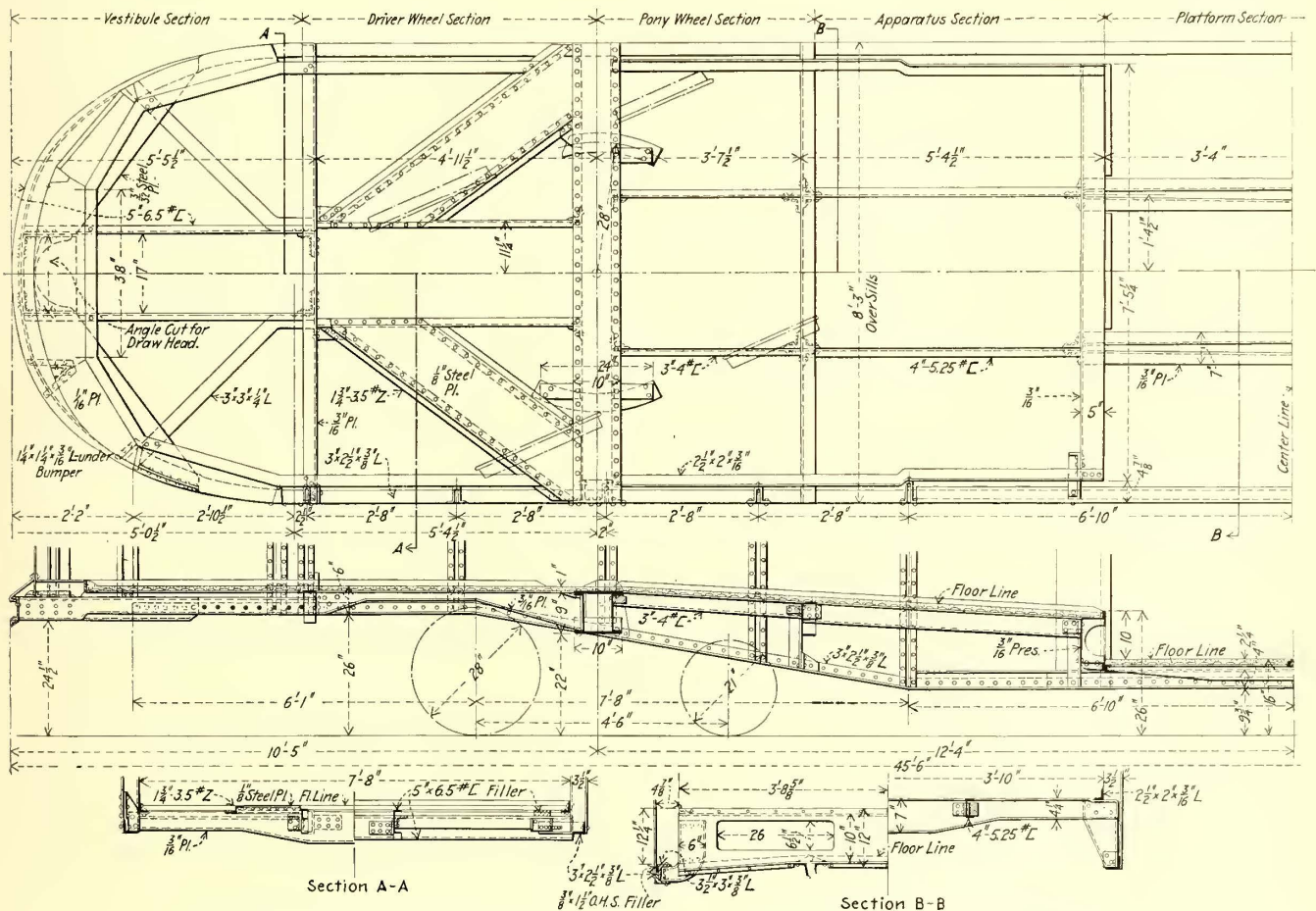
The side sills are made up of 3-in. x 2 1/2-in. x 3/8-in. angles which are reinforced at the center by 3/2-in. x 3-in. x 3/8-in. angles. The side sills are rounded at the ends, where they are riveted to 4-in. 6 1/2-lb. channel-iron bump-

of which have been utilized to receive four electric heaters.

The bolsters are pressed-steel members, the outside dimensions being 9 in. deep x 10 in. wide with top and bottom cover plates 1/2 in. thick and 1/4 in. web. The center line of each bolster is 12 ft. 4 in. from the center of the car, thereby giving an overhang of 10 ft. on each side, so balances the car that very little tension is required at the center. This point received careful attention with



Brooklyn Center-Entrance Car—Half Side Elevation and Half End Elevation



Brooklyn Center-Entrance Car—Half Bottom Framing, Cross-Sections of Framing, etc.

ers, the whole forming a continuous line around the car. A 1 1/4-in. x 1 1/4-in. x 3/16-in. angle is installed under the bumper, and the latter is also reinforced with 3/32-in. anti-telescoping plates. The cross sills on opposite sides of the bolsters are channel-shaped pressings of 3/16-in. plate 6 in. deep. However, the center sills, which form the risers from the center platform to the main floor, are Z-shaped pressings of 3/16-in. steel 10 in. deep, the shape and depth

that all danger of breaking down or sagging was eliminated.

The longitudinal floor members are 3-in., 4-in. and 5-in. channels, their size depending upon their location as shown on the accompanying plan. The floor framing at each end of the car is strengthened by two bent angles which are riveted to the longitudinal members. The driver wheel section is braced by four Z-section diagonals.

All transverse and longitudinal members are so con-

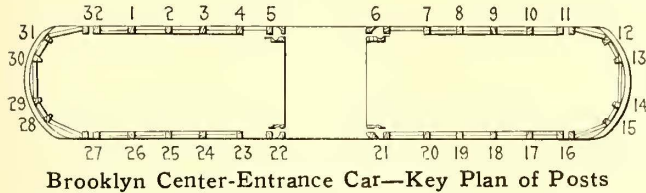




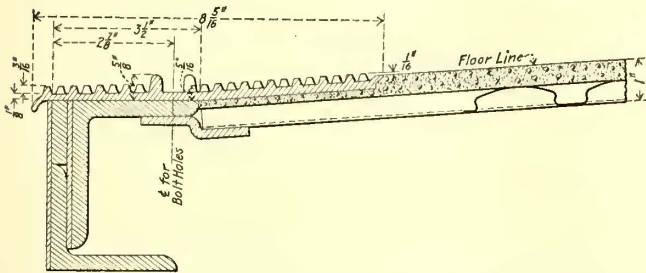


and the eight end sashes drop; in addition, the four outside sashes at the door pockets drop and the four inside door-pocket sashes are hinged and arranged for screens in place of glass in the summer season. The sash lock, which operates on the inside of the sash run, is shown on page 713. This lock has a cam-like movement so that when the handle is pinched the catch is drawn out of the sash-run holes (located 4 in. apart) to permit the sash to be moved up and down. The release of the pinch handle

The center entrance and exits are divided by stanchions and railings to give a clear entrance of 32 11/16 in. in the center and 21 3/8-in. exits on each side. The pivoted railing, which can be swung from one side of the car to the other, depending upon which set of doors is being operated, divides the incoming from the outgoing passengers. The



Brooklyn Center-Entrance Car—Key Plan of Posts

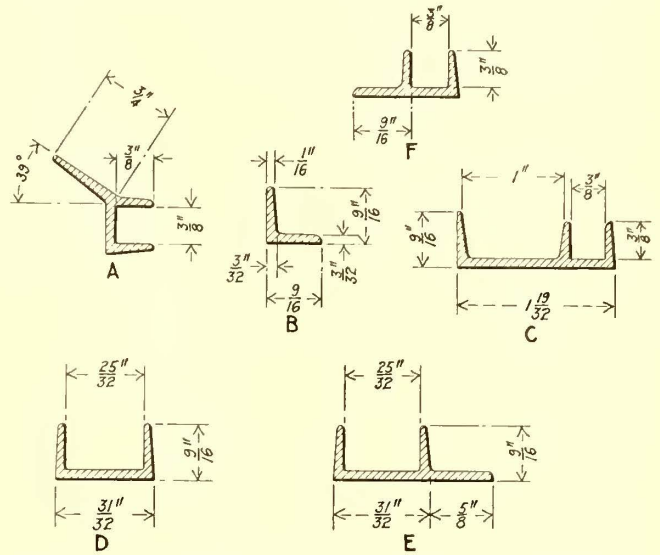


Brooklyn Center-Entrance Car—Cross-Section at Entrance

causes the catch to lock the sash by dropping back into one of the holes of the sash run.

The great width, 39 1/4 in., of the motorman's center sash increases the angle of vision by eliminating posts. As illustrated on page 712, this sash is provided with the Minier window cleaner, which is screwed into and turns on the sash framing. The cleaner proper consists of an outside and an inside arm, each carrying a thin blade, which are revolved simultaneously across the entire window area.

The center doors give an opening 6 ft. 6 in. wide and 6 ft. 2 in. high. They are of twin type, constructed of sheet



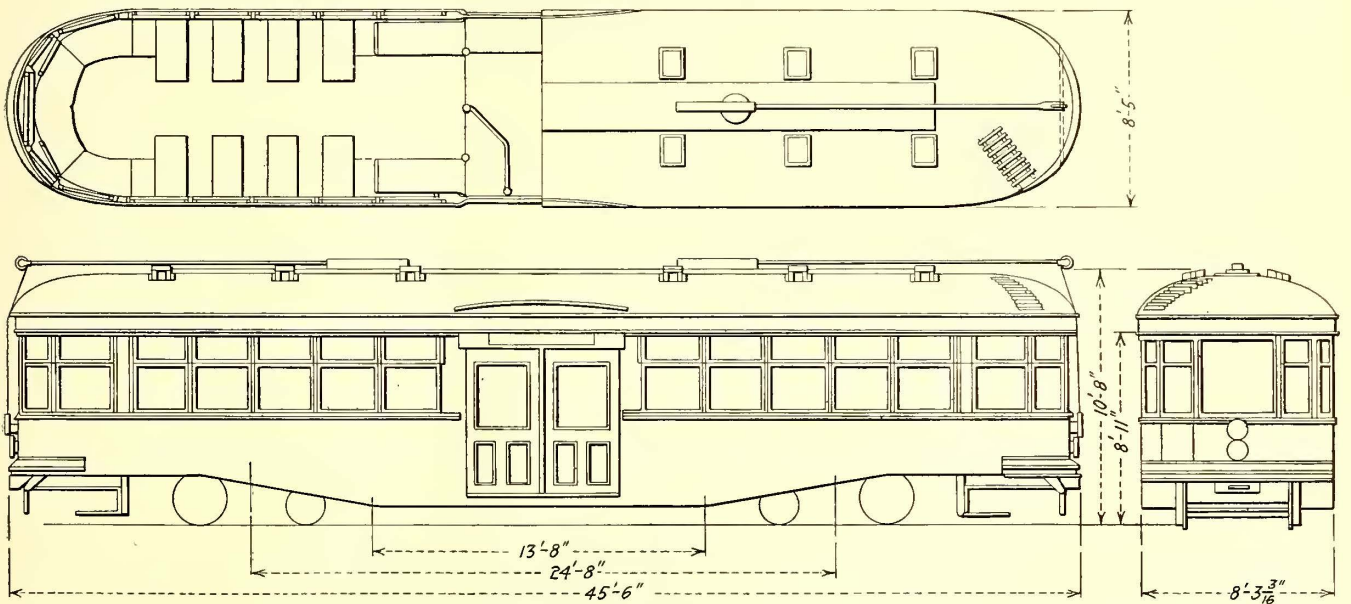
Brooklyn Center-Entrance Car—Specimens of Sash Runs of Extruded Metal

lower panels of the side doors are of clear wired glass to permit unobstructed observation by the conductor while the doors are closed. Soft-rubber buffers are attached to the doors to avoid injury to passengers and damage to their clothing.

A locked swing door 21 1/2 in. wide and 5 ft. 5 in. high is provided at each end of the car for the exclusive use of the motorman. This door is made of welded steel with one drop and one fixed sash.

SEATING

The car seats fifty-eight, which is equivalent to 671 lb.



Brooklyn Center-Entrance Car—Half Plans, Side Elevation, End Elevation, Seating and Main Dimensions

steel reinforced and welded, and slide into pockets formed by the hollow posts. The doors are pneumatically operated by the Consolidated Car Heating Company's apparatus and electrically controlled by means of push button and pedal from the conductor's pedestal, which is located in the center of the well.

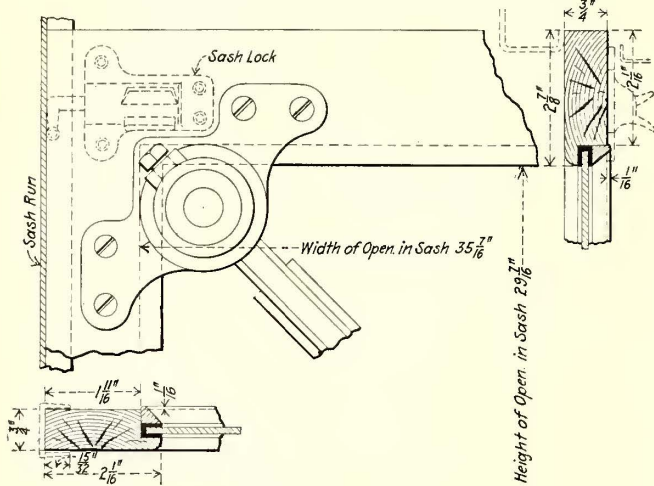
per passenger. The original seating plan called for sixteen cross seats of reversible type with a 26-in. aisle between, longitudinal seats at the center doors and curved seats at the ends. This general plan has been retained as giving maximum seating capacity without congestion at the center, but ingenious improvements have been made in those seats



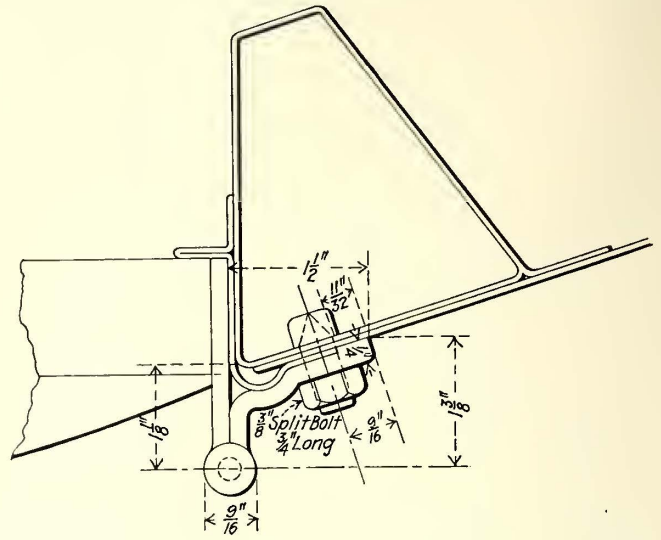
which are in or out of service, according to the direction of running. In the first car (see *ELECTRIC RAILWAY JOURNAL*, June 22, 1912, page 1070) the end seating was so arranged that the section directly behind the motorman was hinged upward at each end when the cab doors were swung out for service, and the outer ends of the seating near the cross seats were raised in like manner with the change in direction. The new end seat is a semi-circle seat-

separator bar in position and the curtain partly drawn down. This view also shows the transfer register and the exhaust duct which leads to the inclosed fan behind the bulkhead.

In the first car the seats opposite the center door were arranged to slide horizontally under the adjacent longi-



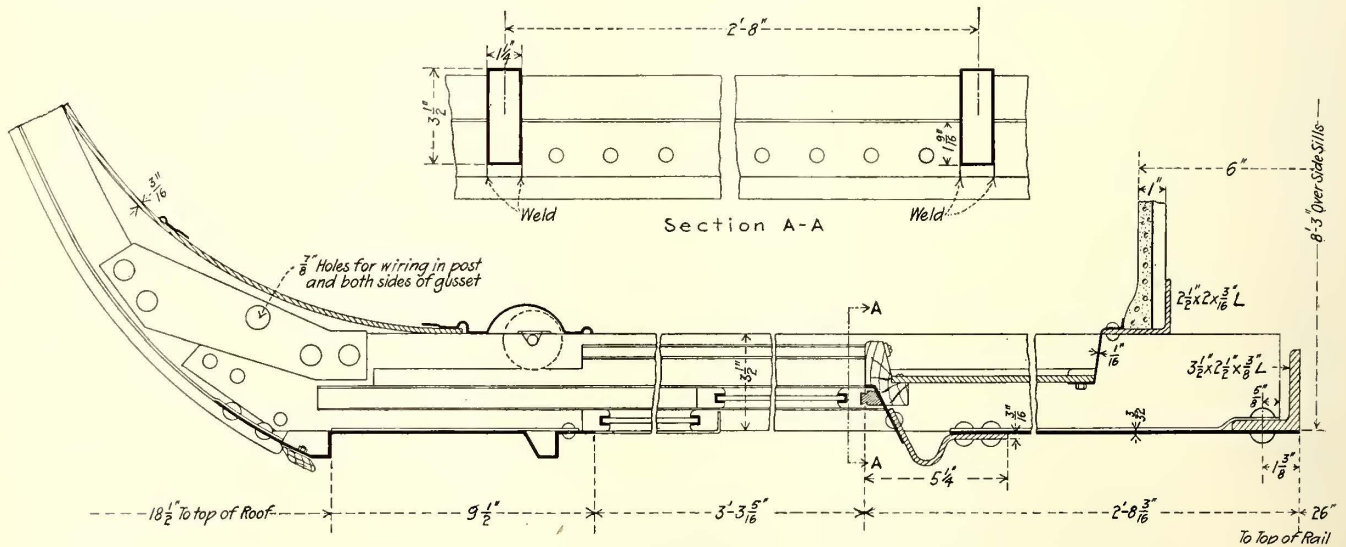
Brooklyn Center-Entrance Car—Attachment of Cab Window Cleaner



Brooklyn Center-Entrance Car—Application of Split Bolt to a Hollow Post

ing eight passengers and made of four hinged segments, each quarter-circle consisting of a long segment near the motorman and a short segment which opens outward to a supporting piece on the adjacent cross seat. Before the motorman makes up the cab by bringing out the two swinging sashes, he turns over the ends of each half-circle of seating, thereby doubling its thickness and halving its length. The upwardly hinged seats were discarded to save time in changing from one end to the other. The curved end seats, of course, are finished on both sides. To avoid the possibility of tearing clothing, they are made with screws which are inserted transversely through the slats.

tudinal seats on the higher floor level. This has been superseded by the arrangement shown in the drawing on page 713 and in the detail view taken at the center door. Each half of the seat is brought into place by swiveling it downward on a rod carried on the upper floor between the side of the car and an aisle stanchion. When not in use each half is kept vertical by a double-acting lock which fits into a retaining bar. The key is of the square-shank type used for the motorman's door. Both seat halves are alike except that one carries a folding leg which is automatically locked into place when the seat is up. The seat with the leg is dropped first. These seats and the pair of center doors



Brooklyn Center-Entrance Car—Section of Side, Showing Connection of Post and Carline and Other Details

The back of the curved seat is always hung behind the control apparatus. The view of No. 1 end on page 715 shows the curved seating arranged for passengers. At this end are located the switchboard, which is behind the bulkhead, the thermostat in front of the bulkhead and the cash fare register. The view of No. 2 end shows part of the seating removed when the cab is ready for use with the

not in service are interlocked both mechanically and electrically to prevent the improper opening of the door.

The cross seats are 34 in. wide. They have but one pedestal, the other end of each seat being carried by pressings between the posts. The arm rests are of mahogany. At each side on the upper level near the door is a longitudinal seat with space for three passengers.



MOTORMAN'S CAB

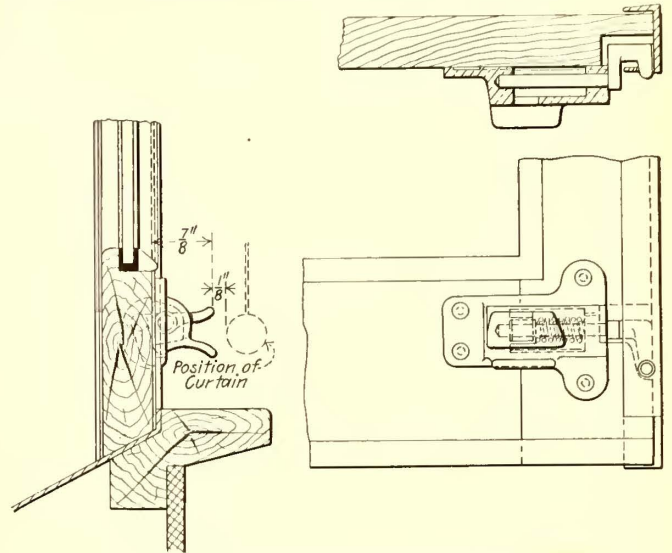
The motorman's cab presents a departure from the original design in that the folding doors have been replaced by a lighter, cheaper and faster combination, consisting of two swinging sashes, which are carried only to the height of the seat backs, and an intermediate curtain which is drawn down behind the motorman to screen him from the passengers. The cab is prepared for service by folding the curved seat, next swinging out the two sashes to an angle of about 45 deg. and then inserting the separator or tie bar, which normally is kept hinged in an upright position on one of the swinging sashes. These sashes are also provided with curtain grooves, the curtains being placed in moldings in the bulkhead above so that when the sashes are opened in position to form a cab the curtain grooves will be in the proper place to receive the curtain fixtures. The motorman's cab has a swinging bracket on which a seat may be placed, but at present it serves only as a support and junction piece for the curved seat when the latter is in use for passengers.

TRUCKS

Each car is mounted on two Brill 62-E-1 maximum traction trucks with 4-ft. 6-in. wheelbase, equipped with Carnegie 28-in. driver wheels and 21-in. pony wheels. The driver axles are of heat-treated carbon steel, with 3½-in. x 7 11/16-in. journals, and the pony axles of open-heat hammered steel, with 3-in. x 7½-in. journals. These journals are somewhat smaller than the company's standard for drop-platform cars. All journal boxes are "Symington" semi-steel and the center plates are of the "Symington" ball-bearing type. The trucks vary from the builder's standard type chiefly in being arranged to take a 28-in. driver wheel and in locating the live lever so that it pulls from the bottom instead of from the top.

maximum vertical height of 2 ft. 1 in. and a maximum width of 4 ft. 7/16 in. Compared with older motors, these dimensions mean a saving of 2 in. clearance below the axle.

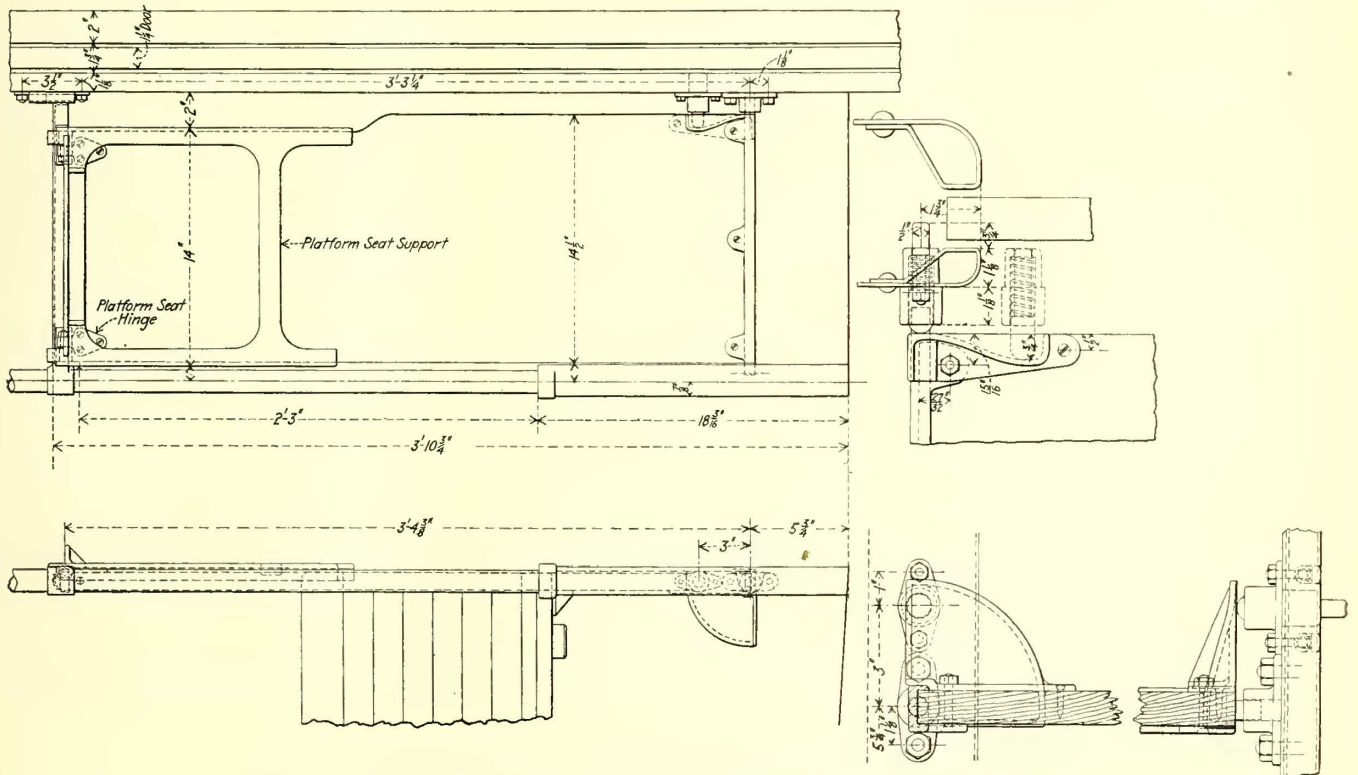
The controllers are of the C-96-A type with pilot valves operating a type SB-30-42-A-1 contactor set. A special feature of this switch group is that the overload relay can-



Brooklyn Center-Entrance Car—Sash Lock

not be reset unless the master controller drum is in the "off" position.

Two relays are provided in connection with the door operation, namely, the signal relay, which is connected in the door signal circuit in such manner as to prevent a car



Brooklyn Center-Entrance Car—Details of Half-Seat Alongside Center Doors

MOTORS AND CONTROL

The traction equipment consists of two GE-234-A motors rated at 40 hp on 500 volts and 50 hp on 600 volts. These motors are wound for field control. On tapped field with seated load they are capable of giving a maximum speed of 25 m.p.h. with a gear ratio of 14:61 and a maximum speed of 21 m.p.h. on full field. The motors have a maxi-

from being started until the doors are closed, and the counter relay, which is connected with the control and motor circuit in such manner as to prevent the doors from being opened while the car is in motion. If for any reason the doors cannot be closed, a short-circuiting switch can be placed in circuit to operate the car with the doors open. A conductor's valve for cutting off the current and apply-

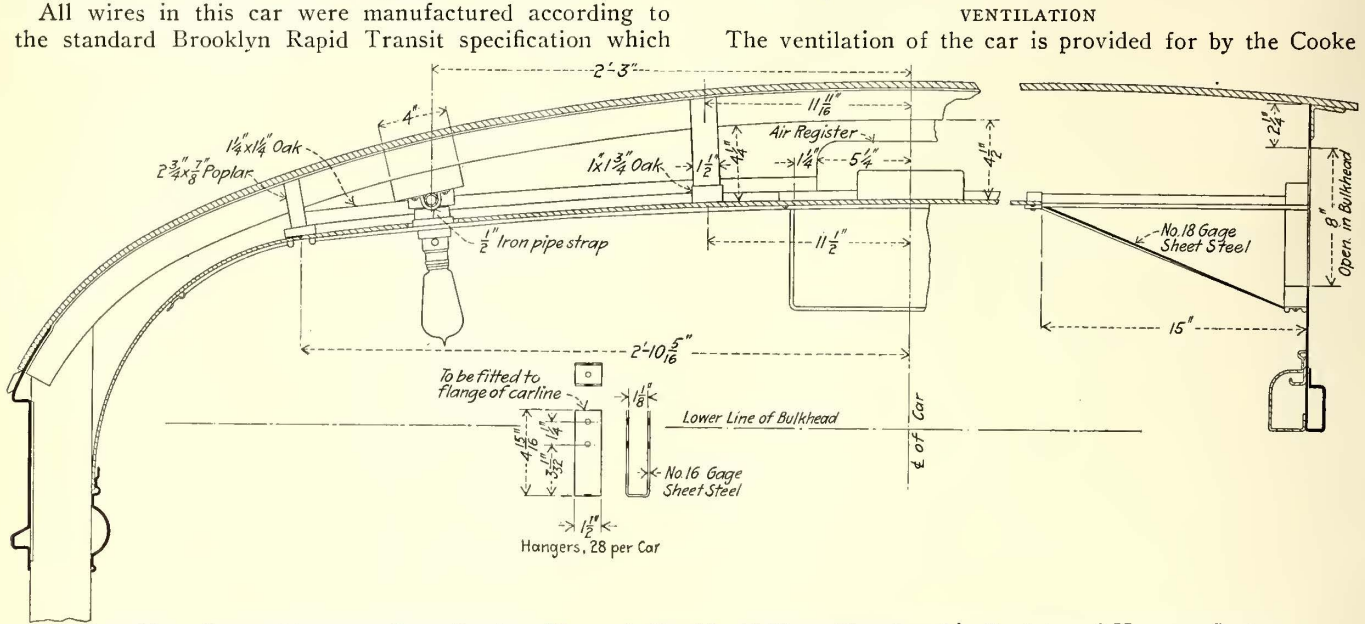


ing the air brakes in emergencies is provided in the fare pedestal. The usual deadman's controller handle is also incorporated. It is proposed to operate the cars singly, but provision has been made for possible multiple-unit operation.

#### MISCELLANEOUS ELECTRICAL EQUIPMENT AND WIRING

All wires in this car were manufactured according to the standard Brooklyn Rapid Transit specification which

feature of the brake rigging is that, owing to the close margin of  $9\frac{3}{4}$  in. between the underside of the platform and the paving, the cylinder levers had to be placed at an angle to permit the proper braking connections. The brake-shoes are of the B. R. T. standard type with American form G slack adjuster.



Brooklyn Center-Entrance Car—Section Through Double Ceiling, Showing Air Register of Vacuum System

calls for 30 per cent Para rubber compound. They are inclosed in "Galvanite" wire duct conduit piping, in conjunction with Crouse-Hinds condulets.

The two trolleys are brought down along the roof to No. 1 end through special brass-flanged castings which are insulated at the joints. The trolley circuit is carried through  $\frac{3}{4}$ -in. conduit to the steel switchbox in the cab. The switchboard is of two-panel slate construction, one panel carrying the power circuits and the other the auxiliary circuits. The two lightning arresters are taken off the main panel and carried perpendicularly to a point below the car floor. The two main fuses are located at one side under the motorman's cab at No. 1 end.

The illustrations of the underside of the car are of interest not only in showing the general layout of the equipment but also the attention given to installing the conduit piping with as many straight runs as possible. So far as practicable, all electrical equipment was hung at one side of the center entrance and the rest of the apparatus on the other side.

#### BRAKES

The air-brake equipment consists of Westinghouse D-1-L compressor with type G governor, type SY-2 brake valve with large emergency port and air sander incorporated, New York Air Brake Company's 8-in. x 12-in. cylinders, type H emergency valve and conductor's emergency valve; also "Wyoming" pneumatic sanders, with two sand boxes under end cross seats adjacent to truss-plank heaters and operated by means of the motorman's valve.

Instead of straight levers, two sheaves are provided at the boundary lines of the center-platform section to maintain the brake rigging at a higher level and to give additional room for other apparatus. Another interesting

system of mechanical ventilation, circulation being obtained by means of an exhaust fan driven by a  $\frac{1}{2}$ -hp motor. An air duct from one motorman's cab bulkhead to the other extends under the roof inside of the car. This duct has a clear cross-section of approximately 150 sq in., with fourteen registers. The motor and fan with the exhaust duct leading to louvers in the bonnet are located under the bon-



Brooklyn Center-Entrance Car—Detail at Center Entrance, Showing Dividing Rails and Stanchions, Conductor's Pedestal, Downwardly Swiveled Seats Alongside Closed Doors, Signs, etc.

net at No. 2 end of the car. Eight fresh-air intakes are provided through the inside lining of the car near the floor line and through the heater backs, thus bringing the fresh air past the heaters before entering the car.

#### HEATING

The heating is provided by eight Consolidated Car Heating Company's cross-seat heaters, eight truss-plank heaters



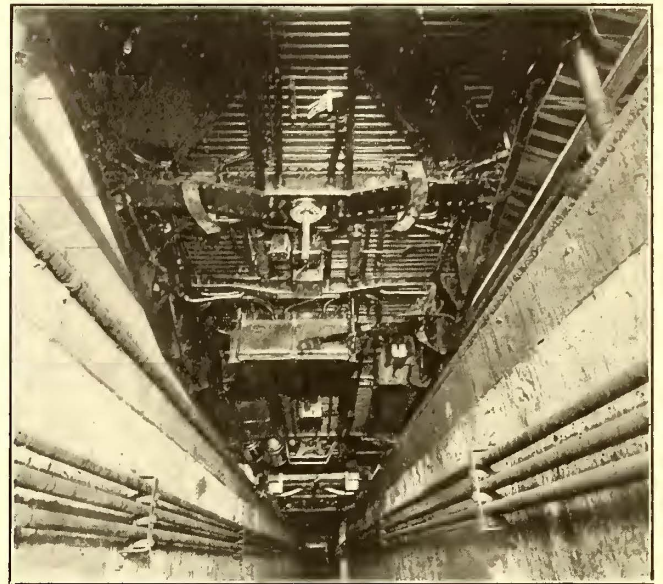
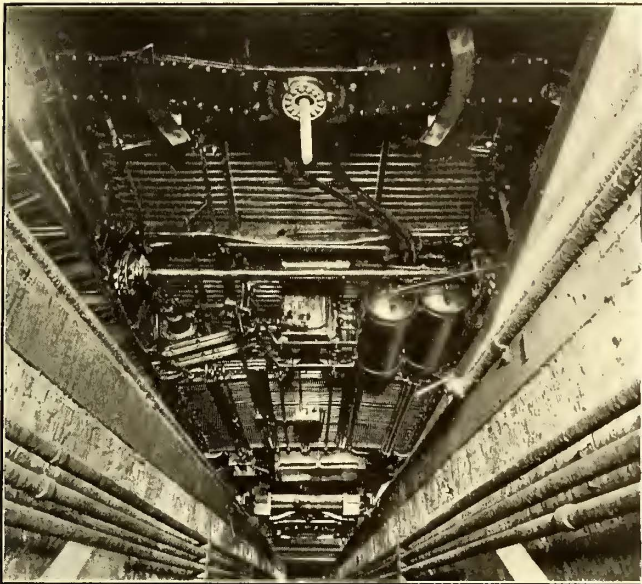
and four panel heaters, all arranged for consuming 450 watts at 550 volts per heater with thermostatic control.

SIGNS AND SIGNALS

The car is brilliantly illuminated by five circuits of five clear-glass 23-watt, 115-volt tungsten-wire lamps distributed as follows: twenty lamps inside of the car, forming two rows of ten each, located 2 ft. 3 in. from the center

FARE, COLLECTION, WEIGHTS, ETC.

As in the trial car, fares and transfers will be collected as the passenger enters. The entrance railings lead the passengers to the conductor, who is stationed at his pedestal in the center of the well. The pedestal is a revolving device with a change table on the top, where fare is paid by the passenger.



Brooklyn Center-Entrance Car—Underside, Air-Brake End

Brooklyn Center-Entrance Car—Underside, Electrical End

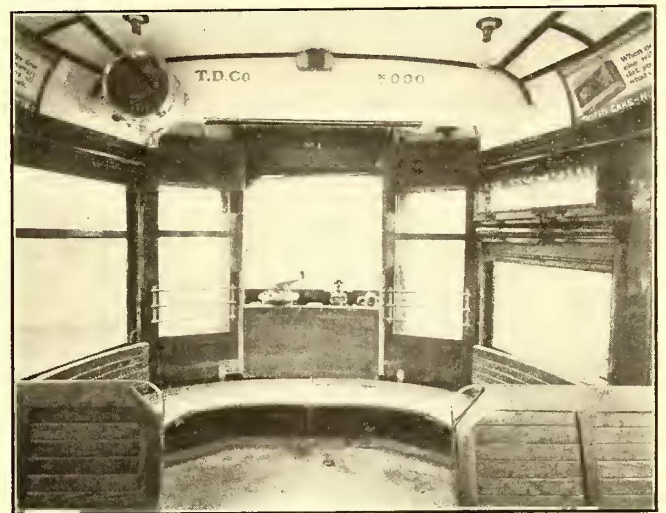
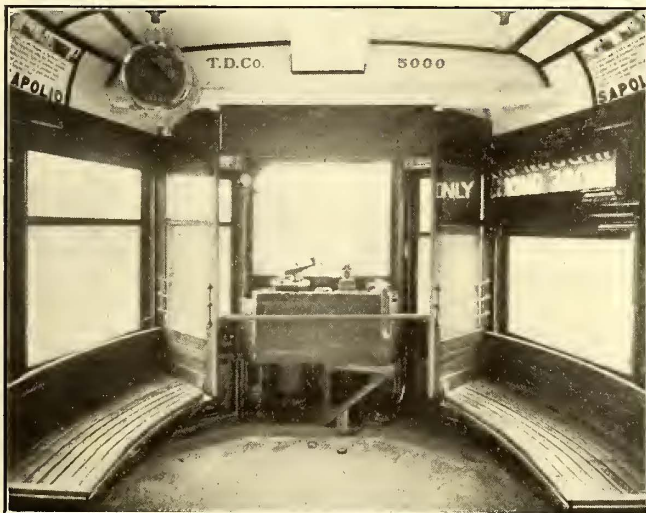
line of the body; two lamps in each end sign box and one lamp in each Dayton headlight.

The destination and route of the car are indicated by the Electric Service Supplies Company's illuminated curtain signs. These signs are installed at each end of the car and at the sides of the doors to show the route and at right-hand diagonal corners to show the destination.

Twenty push buttons, operating the buzzer in the motorman's cab, are installed in the side posts for the conveni-

The weight of this car, including drawbar fittings, etc., is 38,900 lb., compared with 39,550 lb. for the first car. It is expected that slight structural variation will produce a reduction of several hundred pounds more. The four vestibule sashes weigh only 94 lb., whereas the original cab-door layout weighed 480 lb.

The following is a partial schedule of the weights of different parts as determined at the Thirty-ninth Street shops of the company:



Brooklyn Center-Entrance Car—Cab at No. 2 End Ready

Brooklyn Center-Entrance Car—Cab Out of Service

ence of passengers; push buttons are also at the conductor's pedestal, for independent bell signal to motorman. Electric signal lights in the motorman's cab show whether the doors are open or closed. The cash and transfer registers are also operated by electric push buttons from the conductor's pedestal. Hence the car is entirely free from both register rods and signal cords. All push-button circuits are operated from the line current through resistance.

Frame as received, including 480-lb. "Chan-arch".....	8562
Single truck without gear or electrical fittings.....	4371
One motor complete.....	2727
Seats.....	1638
Floor compound.....	1585
Control compound complete with manufacturer's and B. R. T. panels	1370
Agasote roof, headlining, side panels, etc.....	1231
Air-brake equipment as furnished and exclusive of piping.....	1147
Brake rigging.....	834
All glass, including signs.....	679
Trolley stands, poles, etc.....	544
Doors without glass.....	438
Sashes without glass.....	330



# Report on Street Railway System of Kansas City

An Investigation of the Valuation of the Property and Its Apportionment Between the Different Municipalities Served Has Been Made for Adoption in a New Franchise Together with Recommendations for Improvements—An Abstract of the Report Is Given

A report on the value of the properties of the Metropolitan Street Railway System of Kansas City, Mo., has been made by Bion J. Arnold to William C. Hook, judge of the United States Circuit Court, Kansas City.

Prof. Mortimer E. Cooley and Mr. Arnold were appointed on June 6, 1912, as commissioners to investigate and report to the court what in their opinion is a "fair and reasonable sum to represent the capital value of such properties for adoption in a contract for new franchises in the municipalities wherein the properties are operated, the various elements of such value and how it should be apportioned between the municipalities." As Professor Cooley was unable to act on account of illness, the order was amended on July 5, 1912, so as to make Mr. Arnold sole appraiser.

After these orders were entered, the receivers, Robert J. Dunham and Ford F. Harvey, requested that there be prepared in the same connection "such data as would serve to determine all the work that should be done to establish the present system in first-class physical condition, and to recommend such further work as may be necessary to permit the company to fulfil its moral obligations to the community in every sense, that is, to give the people of Kansas City a street car system commensurate with the city and its needs, taking into reasonable regard the conditions under which the company is now operating and must in the future operate."

In the general report Mr. Arnold says in part: "The Metropolitan system consists of the street railway properties of the Metropolitan Street Railway, including that which was formerly owned and conveyed to it by the Central Electric Railway Company and that of the Kansas City Elevated Railway Company, all using franchises received from the different municipalities through which they operate. Intimately connected therewith, though not in the hands of the receivers, is the Kansas City & Westport Belt Railway Company, the stock of which is, as is that of the Metropolitan company, owned by the Kansas City Railway & Light Company. The Metropolitan system, exclusive of the Westport company, contains 259.81 miles of single track, of which 182.28 miles are in Kansas City, Mo.; 5.26 miles in Independence, Mo.; 9.73 miles in Jackson County, Mo., outside of cities therein; 58.17 miles in Kansas City, Kan., and 4.37 miles in Rosedale, Kan. The Westport company has 16.87 miles of track in the present limits of Kansas City, Mo., and 4.23 in Jackson County outside of the city limits. In estimating the values of these properties, the conclusion reached is that the fair and reasonable sum to represent the capital value for adoption in any new contract with the municipalities wherein the properties are located is as follows: Metropolitan system, exclusive of the Westport company, \$35,000,000; the fair and reasonable value of the property of the Westport company for the same purpose is \$1,700,000; total, \$36,700,000. These values thus found should, in the judgment of your commissioner, be apportioned as follows:

"Metropolitan system in Kansas City, Mo., \$28,000,000; Independence, Mo., \$350,000; Jackson County, Mo., \$700,000; Kansas City, Kan., \$5,600,000; Rosedale, Kan., \$350,000; total, \$35,000,000.

"Westport company, Kansas City, Mo., \$1,200,000; Jackson County, Mo., \$500,000; total, \$1,700,000.

"An analysis shows that 81 per cent of the appraised value, 83 per cent of the investment value, 83.8 per cent of the gross revenue, 79 per cent of the car miles and 75.9

per cent of the track miles are located or originate in Missouri, and your commissioner believes that, taking all the facts into consideration and so long as the property is operated as an entity, the division between Missouri and Kansas on a basis of 83 per cent and 17 per cent respectively is fair and reasonable.

"The study of the various considerations affecting this apportionment has been further carried out so as to divide the value apportioned to Missouri between Kansas City, Independence City and Jackson County, and to divide the value apportioned to Kansas between Kansas City and Rosedale, as follows:

"Kansas City, Mo., 80 per cent; city of Independence, 1 per cent; Jackson County, 2 per cent; total Missouri, 83 per cent.

"Kansas City, Kan., 16 per cent; Rosedale, 1 per cent; total Kansas, 17 per cent.

"Since the value returned for the Westport company is practically that shown in the appraisal of that property, the apportionment of such value between Kansas City and Jackson County, Mo., is that shown by said appraisal.

"Many methods have been adopted by courts, experts and students of the problem in valuing street railway properties. Among these are the ascertainment of, first, the actual cash investment therein and the return actually had in the past thereon; second, taking, as was done in Chicago and Cleveland, the actual cost of reproduction less depreciation and adding thereto a fair and reasonable allowance for future earnings, which latter sum is intended to cover the intangible value or various other elements which go to make up the real value; third, the value based upon the deferred earnings upon the actual investment, and, fourth, the fair market value of the property. [The values determined by the various methods are summarized in Table I published herewith.—Eds.]

#### ACTUAL CASH INVESTMENT AND ACTUAL RETURN

"The actual cash investment in the properties of the Metropolitan system, exclusive of those of the Westport company, is \$34,298,061. From this investment there have since the existence of the property been received over and above operating expenses sums equaling only 5.36 per cent annual interest thereon, out of which have been paid all interest charges and all moneys distributed to owners or stockholders as dividends or otherwise. A company must with actual cash investment meet the changing demands of the public for improved methods of service, with actual cash investment in much new property to take the place of property not yet worn out.

"If after meeting such charges and others of like nature the owners have drawn in returns considerably more than the ordinary rate of interest, there has, to the extent of that excess, been repayment largely, if not wholly, for the entire investment, including the losses thus sustained. If, however, the returns have not exceeded a reasonable interest rate, fairness demands that there be protection for the investment which was really made, provided the records show that the property has been efficiently managed. This is especially applicable where a company has spent large sums in the construction of municipal improvements and in extensions into new and comparatively unprofitable territory, which has later been built up to the advantage of the city and ultimately would be to the advantage of the railway company if it were allowed to continue to operate. That both these situations exist in the Kansas City territory is evidenced by the large amount of money spent by



the company for bridges and viaducts and by the excessive track mileage now in operation as compared with other cities.

"The public has benefited by the changes necessitated on account of the supersession and abandonment of inadequate or obsolete property, and the company should have the opportunity, in view of the exceptionally low rate of return it has received to date, of carrying these losses back out of the property, especially if the owners concede the right to the public to retire or amortize a large portion of this value from future earnings.

**COST OF REPRODUCTION LESS DEPRECIATION WITH ALLOWANCE FOR INTANGIBLE VALUE**

"The 'cost to reproduce new' value excludes promoters' profits or development expense and simply represents the investment that would be required to reproduce new to-day the physical property as it stands, no attention whatever being paid to any expenditures that may have been made in past years on account of the horse car lines, cable lines or any portions of the electric lines which may have been constructed and later worn out in service or abandoned.

"The present or depreciated value of the existing physical property has been arrived at by determining the depreciation which has occurred in the existing property between the time of its installation and the date of the appraisal.

"Taking everything into consideration, it would be a fair thing to assume that the rights of the Metropolitan system, as they now exist, exclusive of those of the Westport company, will in some form, in any event, continue until June 1, 1925, and the value of its earning capacity during that time, dependent upon that right alone and exclusive of anything on that account from the Westport company or other franchises extending beyond that date, should be ascertained.

**VALUE ON BASIS OF DEFERRED EARNINGS UPON ACTUAL INVESTMENT**

"Another method of ascertaining the fair value, approved by some experts and adopted in some instances in Wisconsin and by the French and Swiss governments in the acquisition of steam railways for national ownership, is as follows: Ascertain each year the actual investment in the property, deducting the value of superseded property in the year it was superseded, and estimate a fair return on this net investment. Deduct from such return the net income after paying operating expenses, including maintenance, renewals and taxes, charging to operation, however, the cost of superseded property in the year when superseded. Then compound each year the deficit or surplus, as the case may be, between the fair return and the said income. The result will show a sum representing the accrued loss estimated upon the basis of a return at a given reasonable rate or percentage. The total of the accrued loss together with the actual investment in existing property will then represent the fair value of the entire property. Or under a modification of this method a fair return may be figured upon the total investment without charging to operating expenses the cost of superseded property, this method retaining in capital account the investment in property which has been superseded.

"This method allows the investor, wholly regardless of bond and stock issues and liabilities outstanding, the actual amount invested with a fair interest return thereon, charging him, however, with every dollar earned from the property. Tested by this method and considering the purpose for which it is made, the value returned by your commissioner is found to be conservative.

**FAIR MARKET VALUE**

"It has been said that a reasonable fair market value is that sum at which a fair buyer would buy and a fair owner would sell, both being willing to deal at a fair price. So testing and considering the question in the light of one's experience in and judgment of like properties in the large communities of the country, and taking into consideration

the above-mentioned elements as well as the entire situation and surrounding conditions, the fair and reasonable market value of the properties is, in the judgment of your commissioner, not less than the sums hereinabove given.

"The values of the property for the Metropolitan system exclusive of the Westport Belt Railway, as determined by the methods discussed above, are in substantial accord and have all been taken in consideration at the value returned for the Metropolitan system."

TABLE I—SUMMARY OF VALUES OF METROPOLITAN SYSTEM, EXCLUSIVE OF THE WESTPORT BELT RAILWAY

(1) Actual cash investment in the property:		
Investment in the present property.....	\$25,214,870.67	
Investment in superseded property.....	9,083,190.48	
Total investment .....	\$34,298,061.15	
(2) (a) Value as determined from the present value of the physical property alone and the intangible value on the basis of a protected investment:		
Cost to reproduce physical property new.....	\$27,327,549.00	
Less depreciation.....	5,792,514.77	
Present value of physical property alone .....	\$21,535,034.23	
Intangible values .....	13,491,541.27	
Total value .....	\$35,026,575.50	
(2) (b) Value as determined from the present value of the physical property and the intangible values on the basis of an unprotected investment:		
Cost to reproduce new.....	\$28,643,733.02	
Less depreciation .....	5,958,015.19	
Present value of physical property .....	\$22,685,717.83	
Net intangible value .....	12,951,284.82	
Total present value.....	\$35,637,002.65	
(3) Investment in property determined on premise that company is entitled to fair return on capital actually invested:		
(a) Capital value obtained by adding to total investment the accrued deficit in operation below a fixed term, superseded property being retained in capitalization, using 6 per cent and 7 per cent as assumed fair rate of return:		
Total investment .....	\$34,298,061.15	\$34,298,061.15
Accrued loss .....	1,742,251.54	9,903,865.90
Total capital value .....	\$36,040,312.69	\$44,201,927.05
(b) Capital value obtained by adding to net investment the accrued deficit in operation below a fixed return—the superseded property being charged to operation in the year in which it was removed, assuming 6 per cent and 7 per cent rates of return:		
Total investment .....	\$25,214,870.67	\$25,214,870.67
Accrued loss .....	10,829,343.47	18,573,637.20
Total capital value .....	\$36,044,214.14	\$43,788,507.87

**FAIR ORDINANCE PROVISIONS:**

"(a) The contract should stipulate the agreed fair value of the property, which should be so determined as to protect the interests of those whose money is legitimately invested in the creation of the property, and in cases where the returns on the actual investment have not been excessive, as in the case of the Metropolitan system, should assure to the owners a fair return on such value.

"(b) The ordinance should provide for supervision by the city or State of capital expenditures in order either to rehabilitate portions of the property or to make such extensions as are necessary to give adequate service, such supervision to be made for the purpose of assuring investors that their investment is represented by money actually put into the property, thus tending to decrease the rate of return that will be demanded by investors, and at the same time for the purpose of securing the minimum capital investment, as well as the minimum rate of return, all of which serves to decrease the cost of transportation service.

"(c) The city or State should supervise the operation of the property to such an extent as may be necessary in order that the service shall be adequate and of as high a character as is consistent with the returns from operation.

"(d) The surplus from operation that remains after the payment of operating expenses, including taxes, maintenance and a proper reserve for depreciation and after the payment of fixed charges, consisting of the agreed minimum fair return on the capital invested, should be devoted to the following purposes:

"(1) Part to an amortization fund for the purpose of



ultimately retiring any part of the capital investment that is not represented by physical property.

"(2) Part to the company as profit for efficient operation, unless it should be decided to limit the company to a fixed return upon its investment, which return should be somewhat higher than the minimum return referred to in paragraph (d).

"(3) Part to the city as its share in the net profits, if the city so elects in the ordinance, although for the best interests of the citizens it is questionable whether the city should retain any portion of the profits, the better policy being that any such surplus should be utilized in improving the service, extending the system or in establishing a pension or other fund for the benefit of employees of the company.

"(4) The reduction of fares after such time as the company has been able to decapitalize all that portion of its capitalization which is not represented by physical property, or after the decapitalization of the value of tangible property, should this be deemed advisable."

Table II shows the value of the Metropolitan system and the Kansas City & Westport Belt Railway on the basis of a protected investment.

TABLE II—VALUE OF METROPOLITAN SYSTEM AND THE KANSAS CITY & WESTPORT BELT RAILWAY ON BASIS OF A PROTECTED INVESTMENT

	Cost New.	Present Value.
Track .....	\$5,686,568.15	\$3,804,876.82
Grading .....	206,001.97	206,001.97
Bridges, trestles, culverts and viaducts...	1,819,185.80	1,470,443.28
Paving .....	2,177,655.40	1,683,101.96
Electrical distribution system .....	2,274,622.96	1,902,886.58
Rolling stock .....	4,020,127.09	2,853,780.73
Power plant equipment .....	3,305,408.57	2,481,628.10
Shop equipment .....	127,561.20	78,344.58
Stores, roadway tools and miscellaneous equipment .....	428,257.90	418,501.71
Buildings .....	2,525,460.18	2,043,059.72
Furniture and fixtures .....	32,868.80	27,955.07
Real estate .....	2,081,409.04	2,081,409.04
Right-of-way .....	1,431,120.60	1,431,120.60
Property damages .....	73,363.60	73,363.60
Real estate dedicated to municipalities...	236,584.37	236,584.37
	<u>\$26,426,195.63</u>	<u>\$20,793,058.13</u>
Legal expenses, carrying charges and incidentals, 5 per cent.....	1,321,309.77	1,321,309.77
Bond discount, 5 per cent.....	1,387,375.26	1,105,718.39
	<u>\$29,134,880.66</u>	<u>\$23,220,086.29</u>
By companies:		
Metropolitan Street Railway.....	\$24,077,293.70	\$19,028,798.47
Kansas City Elevated Railway.....	2,045,694.69	1,630,440.84
Central Electric Railway.....	1,204,560.61	875,794.92
	<u>\$27,327,549.00</u>	<u>\$21,535,034.23</u>
Kansas City & Westport Belt Railway...	1,807,331.66	1,685,052.06
	<u>\$29,134,880.66</u>	<u>\$23,220,086.29</u>

"In detail the method of determining the future earning value is this: The operating statement of the company for the year ended May 31, 1912, gave the information as to the gross receipts and the operating expenses and showed that the gross income for the year was \$6,346,782 while the operating expenses, including taxes, amounted to \$3,998,548, or a total net income from operation of \$2,348,234. The operating ratio as shown by this year's operation was 63 per cent, of which 17 per cent was charged by the company as maintenance. This operating expense, however, included a large amount of renewal expenditures, amounting to between 3 per cent and 4 per cent of the gross earnings. If the full provision is made to meet the depreciation, it is found that about 6.9 per cent of the gross earnings would have to be set aside annually for the purpose of renewals, that is, about 3½ per cent in addition to the 3 per cent or 4 per cent that was expended during the last year. This would result in an operating ratio of 66 2/3 per cent, which has been taken in determining the net from operation throughout the remaining period of the franchise. Ordinarily the fair operating ratio for street railway companies, including renewals, is about 70 per cent, but the Metropolitan company owns its own power plant, and in the operating expense the charge for power is figured at cost. In this method of estimating the future net earn-

ings the entire capital is supported, which capital includes the cost of the power house. Since the gross receipts contain the receipts from the sale of power, a deduction of \$128,947 was made from the total gross receipts, this amount representing the estimated profit to the Metropolitan company from the sale of power. This amount being deducted from gross receipts of \$6,346,782 leaves the amount of \$6,217,835 as the gross receipts from the operations of the transportation company, and this amount has been increased year by year at the rate of 4 per cent compounded throughout the remaining period of the franchises. The net receipts for the future have been taken as 33 1/3 per cent of the gross receipts, and the present value of the future net earnings from operation for the period ending May 31, 1925, have been determined. From the present value of the future net receipts there has been deducted the present value of the interest, figured at 5 per cent on the value of the physical property required to reproduce the gross receipts above referred to.

"In arriving at the increase in capitalization, the maximum ordinance requirements have been used, which, according to the contention of the cities, call for the construction of 8 miles of single track per annum. This will entail an expenditure of \$750,000 per annum, based on a cost of \$94,000 per mile of track, which is obtained by dividing the total value of the property, exclusive of property damages, real estate dedicated to the city and such items, by the total present mileage. The Metropolitan system is now overbuilt in the city of Kansas City, and the total expenditure for new property that will be necessary during the next fourteen years is practically \$7,000,000. On the basis of the ordinance requirements, however, an expenditure of \$9,750,000 will be necessary, and although this expenditure is greater than the situation warrants, this increase in capital has been used in determining the future earning value. The present value of all future interest payments on this capital has been determined, thus arriving at the total present value of the fixed charges, which in turn are to be deducted from the present value of the future earnings. The final result reveals that the present value of the future receipts amounts to \$25,832,411, while the present value of the interest payments on the capital to be supported amounts to \$12,340,870, resulting in a net earning value of \$13,491,541, this value being figured in accordance with the Chicago method on a conservative basis at every point, that is, conservative as to the rate of increase of gross receipts, conservative as to the operating ratio, and conservative in that a much larger increase in investment is figured on than will be necessary in order to take care adequately of the increased business."

#### PRESENT AND FUTURE TRANSPORTATION REQUIREMENTS

Other sections of the report relate to present and future transportation requirements of the Kansas City district, saying in part:

"Table III shows a comparison between operating statistics for the Kansas City district and eleven other cities comparable in size with the Kansas Cities.

TABLE III—COMPARATIVE STATISTICS FOR KANSAS CITY DISTRICT AND THE AVERAGE FOR TWELVE CITIES

	Kansas City District.	Average for 12 Cities.
Car miles per mile of track.....	83,862	85,233
Revenue passengers per mile of track.....	420,747	496,247
Revenue passengers per car mile.....	5.02	5.82
Miles of track per 1000 inhabitants.....	0.794	0.572
Receipts per capita.....	\$16.53	\$13.26
Receipts per mile of track.....	\$20,825.00	\$23,177.00
Population per mile of track.....	1,260	1,780

"At the average rate of 1 mile of track for each 1748 of population, the Kansas City district would have but 212 miles, instead of the present 281 miles, which indicates an expansion in the track mileage of the Metropolitan system unwarranted by the population served.



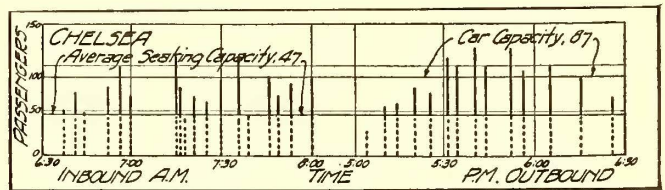
"The first impressions of the transportation system of the Kansas City district are quite favorable, particularly so from the standpoint of one accustomed to the service given in the more congested centers of other cities. The cars move with a reasonable degree of speed in well-paved streets on tracks generally free from traffic interference. Passengers are carried a long distance for a single 5-cent fare. The headway on the various routes varies from a minimum of approximately 2 minutes to a maximum of 15 minutes. The average speed for all lines, including the slower speed now necessary through the central district of the town, averages 8.9 miles per hour. The character of the rolling stock is, in general, first-class. The physical property, in general, is in very good condition. It is found that only 31 miles of track should be entirely rebuilt and 13 miles should be furnished with a new sub-structure within the next two or three years.

"Of the total number of closed cars, approximately 3 per cent were found to be in the shops undergoing heavy repairs, while 2 per cent were found in the carhouses either undergoing light repairs or available for use at time of maximum service. This number of cars out of service is probably a minimum for good operating conditions, since in general with first-class maintenance it is necessary that not less than 2 per cent or 3 per cent of the cars normally available for service (that is, exclusive of those in the general shops) be held in the carhouses for minor repairs and such maintenance work as is necessary in the normal operation of the cars.

"Although a general view of the situation indicates that the traffic is reasonably well handled, in order to determine the sufficiency of the service furnished for the existing

formed as to the traffic which exists on the various routes.

"Tables prepared, covering the entire rush-hour period of one and one-half hours and for a thirty-minute and a fifteen-minute traffic peak, show that, while the average percentage of standing passengers in the evening rush period from 5 p.m. to 6.30 p.m. is only 37 per cent, the average percentage of standing during the thirty-minute



Kansas City Traffic—Typical Passenger Count at Point of Maximum Load

peak is 45.3 per cent and during the fifteen-minute peak is 49.2 per cent, this being for all lines.

"The passenger counts have all been made with the view of determining the character of service during the rush hours. For the rest of the day—that is, from 10 o'clock in the morning to 3 o'clock in the afternoon and from 6.30 to 10.30 in the evening—the passenger traffic was very much less than that existing in the peak hours, and it was found that too many cars were being operated on many of the lines for the revenue received.

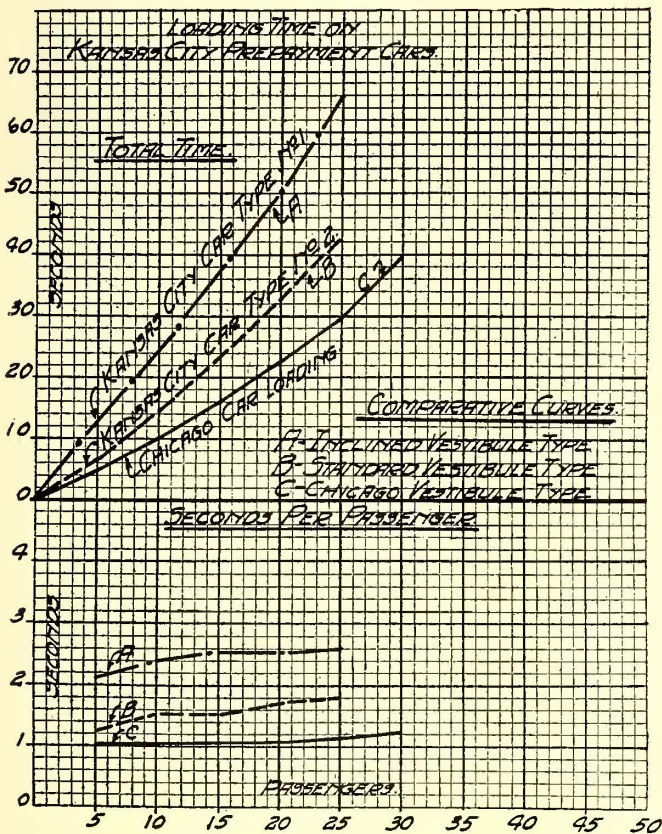
"For the purpose of providing more adequately for the present passenger traffic in the Kansas City district a number of the present through lines should be re-routed and several general improvements are necessary. More cars should be placed in service at the time of the morning and evening rush-hour periods, more particularly during the evening rush hour, and to furnish satisfactory service to the business now being handled the company should place in service twenty-one additional cars.

"The majority of the cars of the Metropolitan company compare favorably with those of any other large transportation center in the country, being large, roomy, comfortable and well adapted for the hard usage to which they are subjected.

"There is, however, a fault in the design of the latest type of prepayment car operated by the Metropolitan company, in which the conductor is placed near the rear vestibule window on the left-hand side as the passenger enters. One of the most important features of the prepayment type of car is that which provides a large platform in order that a number of passengers may board the cars quickly and that the fares may be collected while the car is in motion. As a result of numerous observations shown in detail in the accompanying illustration, it is evident that as a means of facilitating loading in the congested districts this type of car is unsatisfactory and that to it can be charged a large amount of the prevailing car congestion due to the excessive time taken in loading.

"It will be noted that when five or more passengers board the car the average time per passenger required for boarding this type of car is 2.47 seconds, whereas the time for the same number of passengers boarding the ordinary vestibule type of car operated on the Metropolitan system is approximately 1.5 seconds. The average time per passenger boarding the Chicago-type prepayment car, which has a large rear platform, is shown by this illustration to be 1 second per passenger.

"A cause of slow car movements and irregularity of service has been found in the number of accidents which occur daily. Some of these are due to making a near-side stop with a car designed for a far-side stop, passengers frequently being in the wrong place and unnoticed by the conductor. Collisions with vehicles and injuries to persons boarding or alighting from cars, or while in cars, are



Kansas City Traffic—Loading Time on Prepayment Cars

traffic it was necessary to study the situation somewhat in detail. Such investigations have been made, and such data have been collected as would serve to determine the character of the service at critical points on the system. The readings have been compiled in diagrammatic form and one of the records is published herewith.

"By a study of the diagrams a very definite idea can be



quite numerous. The more recently constructed cars of the company are provided with rear platform doors which are closed while the car is in motion. This is probably the most effective remedy for the numerous boarding and alighting accidents, and as more cars of this character are placed in service there should be a proportionate reduction in the number of such occurrences. That the equipment is being used in a rough manner is indicated by the number

the wheels. In arranging the draft tubes particular care was taken to avoid as far as possible the eddies which are known to have a serious effect on turbine efficiency. The importance of these minor details was shown in a slight but very plain difference observable in the tests of two similar turbines. The one that gave the lower efficiency discharged slightly to one side of the tailrace, producing some eddies, and these seem to be apparent to the extent of 1 or 2 per cent in the efficiencies obtained.

TABLE IV—SUMMARY OF EXPENDITURES

IMMEDIATE	
Rehabilitation:	
Track and paving, complete.....	\$1,234,800.00
New substructure.....	213,500.00
Bridges.....	800,000.00
Electrical distribution system.....	95,000.00
Total.....	\$2,343,300.00
100 cars, at \$6,500 each.....	650,000.00
On account New Union Station—	
Track—3.2 miles, at \$50,000.....	160,000.00
On account Twelfth Street and Twenty-third Street traffic ways—	
Twelfth Street, \$200,000; Twenty-third Street, \$250,000; track and line work, \$180,000.....	630,000.00
Cross-town lines—	
Prospect Avenue-Chestnut Street, 2.2 miles; Thirty-ninth Street 4.4 miles; 6.6 miles, at \$50,000.....	330,000.00
Necessary for re-routing—	
Woodland Avenue, Tenth and Missouri, 0.5 mile; Forty-third to Forty-seventh Street, 1 mile; Indiana Avenue, Twelfth to Eighteenth, 1.1 miles; 2.6 miles, at \$50,000..	130,000.00
	\$4,243,300.00
FUTURE	
Extensions—track, paving and line work, 27.3 miles.....	\$1,365,000.00
Carhouses.....	450,000.00
Bridges.....	650,000.00
Shop addition.....	125,000.00
Cars—twenty per year for ten years—200.....	1,300,000.00
Power plant equipment.....	500,000.00
	\$4,390,000.00
	4,243,300.00
Total.....	\$8,633,300.00
Of the above amount it is estimated that only one-half of the rehabilitation expense on track and paving and one-third of the cost of rebuilding the elevated structure will be a capital account charge; therefore in determining the total additions to plant account during the remaining franchise period two-thirds of these amounts should be deducted..	
	1,527,721.00
The increase in the capitalization during the next thirteen years should be.....	
	\$7,105,579.00

of persons falling in cars. Automotoneers placed on the controllers would compel a more gradual application of power and thus lessen the jerking of the cars when starting.

"The universal transfer system now in effect on the Metropolitan system is very liberal in its provisions and is being subjected to great abuse, particularly in the downtown district. The trading of transfers has been frequently observed, and traveling in a loop on a single fare is possible in several different directions."

A number of changes in routing are recommended by the commissioner together with expenditures for rehabilitation, of which a summary is given in Table IV.

## RECORD EFFICIENCY FOR WATER TURBINES

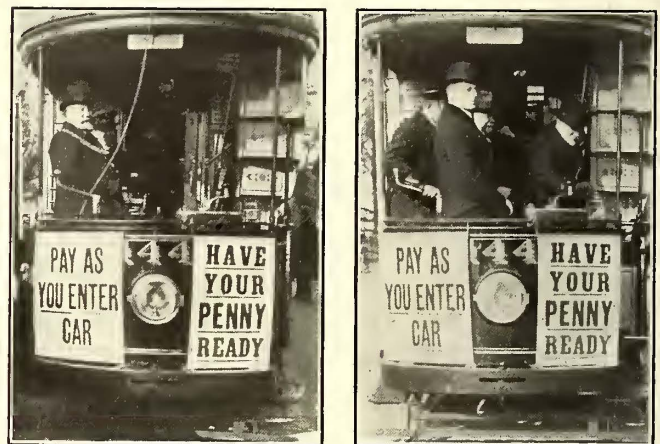
Ordinarily speaking, water turbines seldom show efficiencies exceeding 85 per cent, and at anything but the most advantageous gate opening 80 per cent is not an uncommon figure. Recent tests on four 6000-hp, single-runner Francis-type turbines of the Appalachian Power Company at New River, Va., have shown much higher results. The machines operate under the fairly good head of 49 ft. and at 116 r.p.m. They are large vertical-shaft turbines and therefore obtain some advantage in the matter of friction. The maximum efficiency rises to between 93 and 94 per cent and remains above 90 per cent from about 80 per cent load up to full load, after which it drops off rapidly. The rise in efficiency toward this maximum is extremely steady and the wheels pass 80 per cent efficiency at half load.

The results obtained seem to be attributable to very careful design and manufacture helped out by skill in placing

## PREPAYMENT ZONE SYSTEM INAUGURATED AT LEICESTER

On March 19 the first installation of prepayment cars for a street railway with zone fares was made in England by the Leicester Corporation Tramways with ten double-deck cars furnished under license of the International P-A-Y-E Tramcar Company, Ltd., London. A description of the entrance and exit arrangements of these cars was published in the ELECTRIC RAILWAY JOURNAL for March 1.

The introduction of the prepayment service on the Narborough route of the Leicester lines was of particular in-



Mayor Standing on Platform and Passenger Depositing Ticket on Leaving the Car

terest because it is demonstrating that the prepayment system is applicable to any form of the zone fare system as well as to single-fare systems. On this route four fare zones are in use. The abuse of overriding, the European equivalent of missed fares in this country, is obviated by a novel ticket machine which permits the conductor to issue with great rapidity but absolute accuracy tickets of various colors or numbers corresponding to the zones named by the entering passengers. On leaving the car each passenger drops his ticket in a glass-covered box which is under the eye of the platform man. Overriding is therefore readily obviated because all tickets deposited within a given zone must be of the color or number which corresponds to that zone. Of the two accompanying illustrations, one shows the ticket machine in charge of the conductor and also (at the extreme right) the box in which departing passengers drop their tickets; the other view shows a passenger in the act of depositing a ticket.

The inauguration of the prepayment service at Leicester was made quite a social occasion as the Mayor himself started the first car. After the trial trip, Alderman Flint, whose journey to America was largely responsible for the decision to use prepayment cars, entertained the representatives of the municipality and the licensing company.

Reports which have been received since the introduction of the service state that the cars are operating without a hitch. During Easter week they carried record crowds to the satisfaction of both the passengers and the tramways.



**EXPRESS CAR FOR AUTOMOBILE SHIPMENTS**

The Northern Ohio Traction & Light Company, Akron, Ohio, has recently placed in service a baggage and express car of unusual design. It is arranged to accommodate the heavy rubber and automobile shipments over this line from Akron, Ohio. Akron is the home of the rubber-tire industry, being the largest center of this kind in the world, and a considerable amount of this class of express business is handled by the traction company.

The design of this car includes an all-steel underframe and an arched roof body of wooden construction. The body is built for single-end operation and so that the rear end will open full width, thus permitting automobile bodies or other material to be loaded from the rear end from either an incline or an elevated platform. The full-width opening at one end of the car is obtained by designing the vestibule in three panels. A sash door forms the central panel, which is hinged to one of the side panels, and the latter in turn is hinged to the side of the car-body framing.

Three heavy strap and pin hinges extending practically the full width of each side panel permit of the usual vestibule construction, insuring rigidity when locked in the closed position and reducing the tendency to sag when open. There is also special provision made for adjustable posts, so that space may be arranged for different kinds of freight. Pockets in the roof and a bolt lock on each post base permit of the post being placed after a shipment has been loaded and thus serve as blocks to fix the shipment's position on the floor.

Car illumination is obtained from a series of lamps arranged down the center of the ceiling. They are covered with substantial metal guards to insure against breakage. Loading and unloading of small shipments is facilitated by two 7-ft. doors on each side of the car.

mounted on McGuire-Cummings No. 10-B, M. C. B. trucks, and the car was built by the McGuire-Cummings Manufacturing Company. Motor control is obtained through a Westinghouse type HL unit switch control equipment.

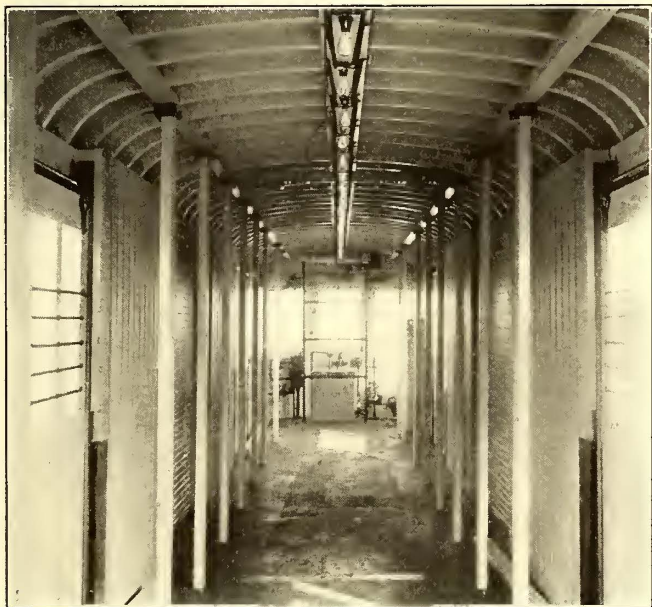
The car was constructed with a view to being used in heavy service, and the essential dimensions are as follows:



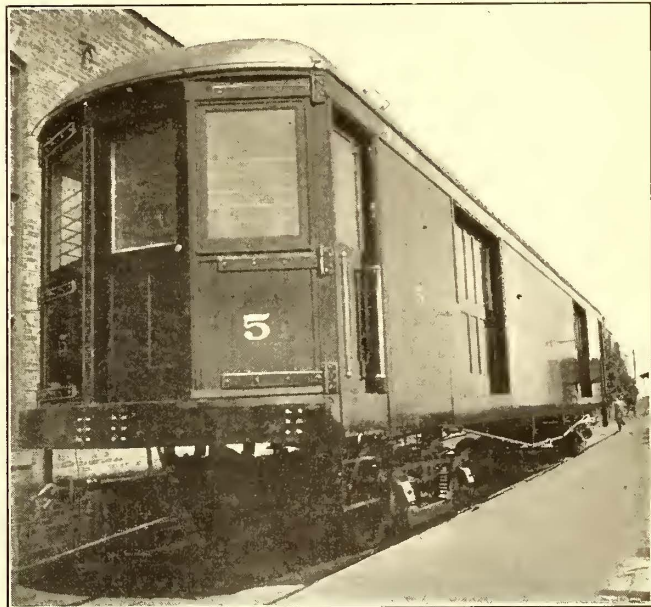
**Express Car for Automobiles—Side View, Showing Wide Side Doors**

Length over all.....	60 ft. 0 in.
Length of body.....	58 ft. 4 in.
Width over all.....	8 ft. 8½ in.
Distance between center pins.....	37 ft. 0 in.
Diameter of wheels.....	35 in.
Length, wheel base.....	6 ft. 6 in.
Weight of car body only.....	30,000 lb.
Weight of two trucks.....	15,000 lb.
Weight of electrical equipment.....	17,200 lb.
Weight of air-brake equipment.....	2,200 lb.
Weight of miscellaneous equipment.....	500 lb.
Total weight of car completely equipped.....	64,900 lb.

A very complete set of operating equipment is mounted in the cab, including the master controller and air-brake equipment. The cab equipment is unique in that the cut-out cocks for the air system are placed inside of the car instead of underneath as is usual. This makes it a very



**Express Car for Automobiles—Interior View, Showing Adjustable Posts, and Rear View, Showing Arrangement for Full-Width Opening**



To provide comfort for the trainmen at low temperatures, a Peter Smith forced hot-air heater has been installed. The heat is carried over the entire length of the car body in metal ducts placed under the roof.

The electrical and air-brake equipments are the Westinghouse design. For propulsion four Westinghouse No. 304 commutating-pole, 90-hp railway motors are used. This type was selected for the heavy service incident to inter-urban freight and express operation. These motors are

convenient arrangement for the motorman. The location of the sand box is such as to afford a seat for the motorman.

Fenders are painted in Portland, Ore., by being dipped in a tank, and to reduce the amount of paint which would have to be used to fill the tank, the tank is half filled with water before the paint is poured in. As the paint is nearer the top, the fender emerges covered with paint after it is dipped into the tank.

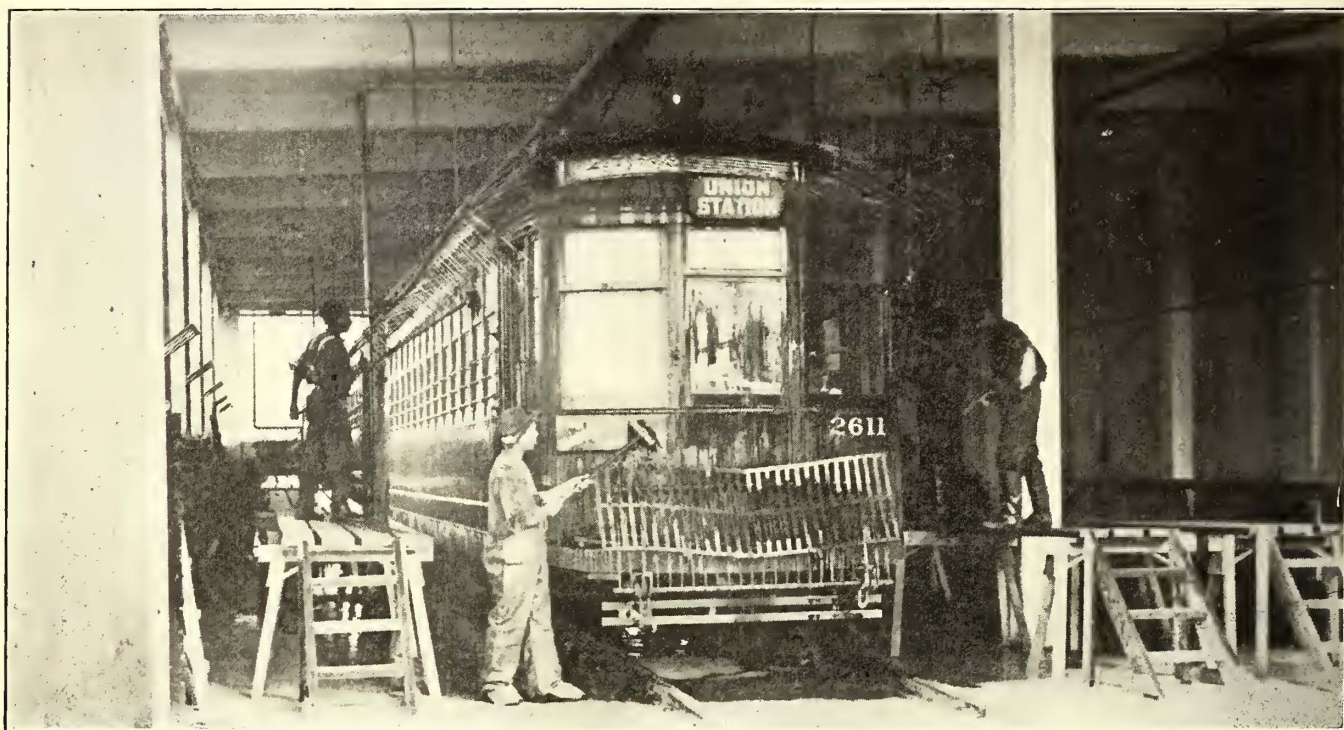


NEW CAR-WASHING PLANT AT ST. LOUIS

At the Park Avenue car yards of the United Railways Company at St. Louis a frame building formerly used for washing cars was destroyed by fire about a year ago. Since that time a fireproof, reinforced-concrete building, 114 ft.

the building are two cisterns having an aggregate capacity of 45,000 gal. The down-spouts from the roof of the building and from one side of the neighboring building lead into these cisterns, so that after a rain the water has been completely flushed out and replaced by rainwater.

The capacity of the building is four cars. The tracks

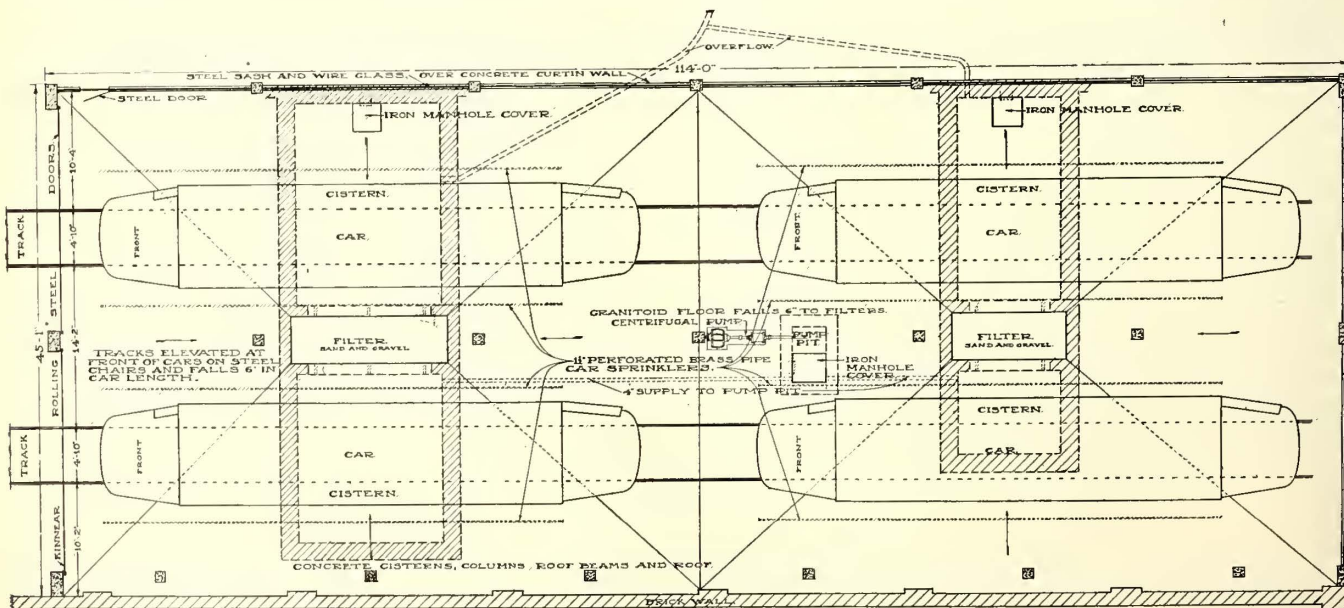


St. Louis Car-Washing Plant—Interior View of Building, Showing Plant in Operation

x 45 ft., has been built for car-washing purposes. There is no carhouse at this location, the cars being stored in the open, and it is therefore necessary to have a building which may be heated in cold weather so that the cars may be washed at all times of the year.

The building is entirely fireproof, one side resting against

are elevated on one side and depressed on the other so that when a car is in proper washing position all the water on the floor of the car runs to one corner of the car, from which it may be drained. On each side of the car, at the roof level, there is a 1½-in. perforated brass pipe. The perforations in this pipe throw the water in two direc-



St. Louis Car-Washing Plant—Plan of Building, Showing Filters and Cisterns for Return Water

the brick wall of the neighboring building. The front is equipped with Kinnear rolling doors, and the other two sides are constructed of a concrete wall and steel sashes supplied with ¼-in. wire-glass. The roof and columns supporting the roof are of reinforced concrete. Underneath

tions, in one direction against the ventilators in the monitor roof and in the other direction against the side of the car. The force of the water may be regulated by means of a valve on each perforated pipe. Permanent wooden platforms have been erected at the side of each car so that



the car washer may regulate the force of the water and wash the side of the car by means of a brush without getting wet. A hose connection for each car is taken off the water system, the nozzle on the hose being supplied with a valve so that the flow of water may be regulated by the man manipulating the nozzle. This hose is introduced at one of the windows of the car and is used for washing the interior.

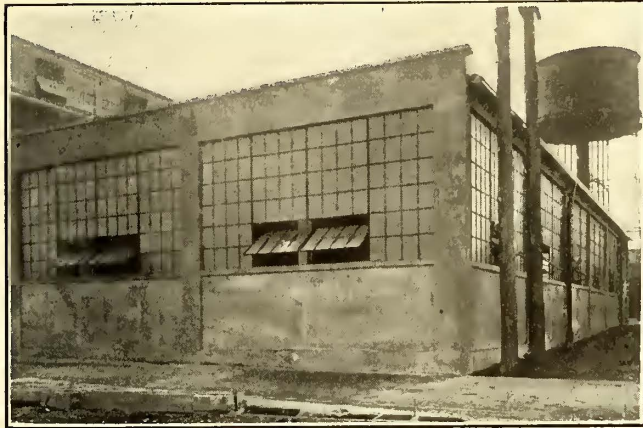
The city water pressure at this location is about 40 lb. per square inch, which is amply sufficient for this work. In order to economize in water a filtering arrangement has been introduced below the water level in the cisterns so that the water may be purified and used again. A 2½-in.,

average time required for completely washing a car inside and outside, including time lost in car switching, is about twenty minutes per car.

The cost of the building, exclusive of track, piping, heating, lighting and cisterns, was \$6,000, or about 6 cents per cubic foot of volume.

### RE-HEARING OF THE PAINESVILLE TRANSMISSION CASE

In the issue of the *ELECTRIC RAILWAY JOURNAL* for June 8, 1912, an account appeared of an important hearing before the Ohio Public Service Commission. The case was



St. Louis Car-Washing Plant—Rear View of Building, Showing Elevated Tank



St. Louis Car-Washing Plant—Front View of Building, Showing Washing Platforms

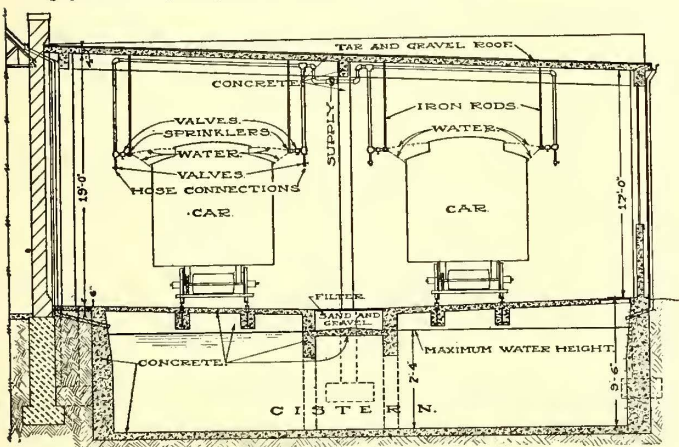
two-stage centrifugal pump, driven by a 7½-hp motor, pumps the water from the cisterns back into the washing system. By means of valves either city hydrant water or water pumped from the cisterns may be used. The filters are about 18 in. in depth and are filled with fine gravel which has been screened through a ¼-in. screen. Every morning about 1 in. of the top of this filter is removed and thrown away, fresh gravel being put in its place. Once a week the entire contents of the filter are removed and replaced with fresh gravel. The rainwater from the roof is introduced below the water level in the cisterns so that the entering fresh water will float away into the sewer any scum on top of the water in the cistern. The two cisterns empty into a pump pit and are controlled by valves so that

brought before the commission by the Western Union Telegraph Company and involved a transmission line which had been recently installed by the Cleveland, Painesville & Eastern Railroad on its own right-of-way. This, however, adjoined the right-of-way of the Lake Shore Railroad, and the dispute was concerned with the character of construction and location of the transmission line, which were held to be such as to constitute a serious risk to the general public. The case aroused great interest as it opened up a large field of possible interference with the progress of transmission line construction. Leading experts were called as witnesses of both sides and the whole subject of transmission line engineering was thoroughly presented. The general aspects of this case were also discussed in a paper delivered by J. G. Swain before the Central Electric Railway Association and reported in the *ELECTRIC RAILWAY JOURNAL* for June 15, 1912.

On Feb. 11, 1913, the commission rendered a decision substantially in favor of the defendant by issuing an order imposing certain minor requirements. This order is numbered 155, and its provisions were to be carried into effect by March 1, which was done to the commission's satisfaction. The items of the order are substantially as follows: Certain wires were to be moved so that they cleared the Western Union wires by 6 ft.; high-voltage strain insulators were to be installed in certain guy wires (about sixty in number) in place of the low-voltage insulators originally used; a few push guys were to be put in; inspections are to be made every ten days instead of bi-weekly as heretofore, and the reports of these are to be subject to inspection by the commission.

The case is again brought to attention by the announcement of a re-hearing to be held in Columbus on May 6, the complainant alleging the finding of new evidence.

The Durban Municipal Tramway, Durban, South Africa, reports the gross income for the year ended July 31, 1912, as \$593,986, of which \$87,017 was net. The tramway carried 15,655,737 passengers during the year.



St. Louis Car-Washing Plant—Transverse Section, Showing Location of Sprinkler Pipes

either cistern may be pumped out and cleaned whenever necessary without interfering with the use of the other cistern.

The washing crew consists of five men. One man washes the outside of the car while four men wash the inside. The



## EFFECT OF THE FLOOD ON THE OHIO ELECTRIC RAILWAY

Conditions on the Ohio Electric Railway system are becoming normal again rapidly, except at points where track and bridges were damaged so seriously that time will be required to prepare them for regular operation. The difficulty with floods began to develop on the morning of Tuesday, March 25, on the most northerly lines of the sys-



Ohio Flood—Washed-Out Culvert on Ohio Electric Railway

tem, and as the floods swept south other lines and property controlled by the company were affected on succeeding days. Communication between the different offices and the general offices in Cincinnati was cut off for a time but was restored as quickly as possible and the work necessary to permit resumption of operation was begun. The full extent of the damage done to the property of the company cannot be judged accurately at this time, but the principal points at which loss has been sustained are given in the following summary of conditions on the entire property. The system is divided into several districts and in all of these some difficulties causing suspension of operations have arisen.

### THE SOUTHERN DISTRICT

The southern district is that served by the Cincinnati, Dayton & Toledo Traction Company, which is leased by the Ohio Electric Railway Company and comprises the interurban line between Cincinnati and Dayton, the branch line from Miamisburg to Germantown, the Hamilton city railway line and the Dayton city railway line. The greatest loss in this district, and in fact on the entire system, was between Dayton and Hamilton. About 50 per cent of the high-tension transmission line between these two points was destroyed.

Very little damage was done between Dayton and West Carrollton, but between the latter point and Miamisburg the track was washed very badly in a number of places. Thus a bridge across the Miami River on the Miamisburg-Germantown branch and about 50 per cent of the track between Miamisburg and Franklin were washed out. The greatest damage in this section, however, was at Chautauqua, where for a distance of about half a mile the tracks and roadbed, as well as poles and wires, were entirely washed away. Some of the rail is badly bent and twisted and cannot be used at all.

The substation at Franklin was damaged slightly by water, and there was about 2 ft. of water in the building. Between Franklin and Middletown there were a large number of washouts, but none of these was very serious. Very little damage was done to property at Middletown. South of Middletown, however, a new 1200-ft. bridge with concrete piers and abutments was completely wrecked. This bridge crossed the Miami River and was built two years ago of 90-ft. plate girders. The abutment of this bridge on the Middletown side remains, together with the first pier from that abutment, and also two piers about the middle of the river. The latter two piers, however, were damaged. The span of girders supported by the

abutment and the first pier remain in place. The other piers were washed away. The approaches on both sides of the Middletown bridge were damaged badly. The tremendous force with which the water swept down on this bridge is shown by the fact that two bridges of the Cleveland, Cincinnati, Chicago & St. Louis Railroad just above this one, which were erected at about the same time but were of much heavier construction, were also wrecked completely.

The overway across the Cincinnati, Hamilton & Dayton Railway tracks on the line between Middletown and Trenton was also wrecked completely, but the bridge over Elk Creek, a short distance away, was not damaged. With the exception of one washout on the tracks between Trenton and West Hamilton the damage in this section was slight.

On B Street in West Hamilton for a distance of a mile, although the tracks were not damaged, the overhead construction was entirely destroyed. Practically every pole was cut off at the ground line and carried away. When the flood reached West Hamilton it came so suddenly and with such force that one car on the city line which was caught on B Street was wrecked by floating debris. The upper structure of the car body was battered to pieces and carried away. Although the force of the water was not strong enough to carry away the car motors and trucks, which remained on the track, numerous freight cars of the steam railroad company in this vicinity were swept away.

The county bridge at High Street connecting West Hamilton and East Hamilton was completely destroyed, and this cut the line of the company in two at that point.

A good deal of damage was done to some of the city lines in Hamilton, and there were a number of washouts between that city and the terminal of the interurban lines in Cincinnati.

### THE WESTERN AND NORTHERN DISTRICTS

The western district comprises the interurban lines between Dayton, Ohio, and Richmond, Ind., and between Dayton, Ohio, and Union City, Ind. These lines were damaged very slightly, but their operation was discontinued until April 7 on account of the power situation. The lines receive current from the Lindenwald power station at Hamilton, Ohio, but were unable to get it because of the destruction of the high-tension transmission lines extending from Lindenwald to O'Neils, the first substation south of Dayton.

The northern district comprises the Lima city railway,



Ohio Flood—Damaged Track Between Springfield and Dayton

light, power and heat plants, the interurban lines between Lima and Defiance, Lima and Toledo, Lima and Fort Wayne and Lima and Springfield.

On these lines the damage was very slight, though about 17 miles of track were under water, and one end of the bridge at West Liberty dropped a little, but has been raised since. Several of the lines discontinued operation



for from four to five days, but all are open now and normal service has been resumed. No damage was sustained by the city railway and lighting systems of Lima.

#### THE CENTRAL DISTRICT

The central district comprises the interurban line from Dayton to Columbus, the branch line from Medway to New Carlisle and the Columbus-Orient interurban line.

The line between Columbus and Dayton suffered a good deal of damage immediately west of Columbus. The paving, foundations and tracks were washed out for a distance of about 800 ft., and as the city bridge across the Scioto River at Tom Street, Columbus, was also washed out, operation into that city was necessarily discontinued. A temporary bridge is being built at this point, which will permit the resumption of operation soon. No damage whatever was done to the new interurban station at Columbus and the damage between Columbus and Springfield and in the city of Springfield was small.

On the line between Springfield and Durbin about 1000 ft. of track were washed out. Between Durbin and Osborne, a distance of about 11 miles, stretches of track were washed out entirely, and so powerful was the force of the water that in some places it is scarcely possible to see where the roadbed was originally. Right-of-way fences and poles, as well as track and roadbed, have disappeared completely on sections of the line between these two points. Where part of the roadbed stood originally at one point on this section there is a pool of water about 2000 ft. long, which in some places is 16 ft. deep. None of the structures or bridges on this section sustained any damage.

Between Durbin and Dayton the amount of damage was slight. The line has not yet been operated into Dayton because of the fact that Third Street, on which the tracks extend from Springfield Street to the terminal station, is covered with debris and wrecked houses. The wreckage of houses after drifting in the flood collected in this street and will make it impassable until the street is opened again for traffic. The first floor of the passenger station at Dayton was damaged, but no serious damage was done to the building itself. The freight house at Dayton was not damaged, but the contents were damaged. Very little damage was done to tracks and overhead work at Dayton.

The line between Columbus and Orient was not damaged, but cars can be operated only to the site of the Town Street city bridge crossing the river, because this bridge, as stated, was carried away by the flood.

The power plant at Medway was not damaged, as it happened fortunately that the force of the water carried away the dam raceway at that point and thus released the water, which otherwise would have flooded the power house. On account of the condition of the water operation was suspended for three or four days, but the electrical equipment did not get wet.

#### THE EASTERN DISTRICT

The eastern district comprises the interurban line from Columbus to Zanesville, the city line in Newark, the interurban line from Newark to Granville and the city lines and light and power plant in Zanesville.

The principal damage in this district was done in the city of Zanesville, where the loss was heavy. Lines of the city system were washed out for stretches of two or three blocks. The city bridge over the Muskingum River at Third Street, over which one line was operated, went out in the flood and that line therefore has not been operated since. The Southeastern Ohio Railway, Light & Power Company also lost its bridge over the Muskingum River at Zanesville.

The water in the power station at Zanesville reached a height of 15 ft., flooding the basement, boiler room and engine room. The water was up 12 in. on the switchboard gallery. This condition made it necessary to abandon lighting service at this point, but transmission lines were extended from the Hebron plant, and two portable sub-

stations were taken to Zanesville, so that current was obtained for the operation of some of the city lines. The Zanesville power plant escaped being wrecked when a girder of the Baltimore & Ohio Railroad bridge, which was dislodged by the water, just grazed the structure. The water entered the building with such force that it carried away all of the windows and sashes. The entire electrical equipment was under water for about three days, and when the water subsided it was necessary to clean out the mud, which had reached a depth of between 1 ft. and 2 ft. In order to dry out the equipment the company put furnaces all through the station, and in addition ran current through the generators at low voltage. Two employees of the Westinghouse Electric & Manufacturing Company, who had had experience in the drying out of equipment damaged by floods, assisted in the work. It was expected on April 11 that lighting service would be resumed in Zanesville in a day or two.

The city line in Newark, the Newark-Granville line and the Hebron plant escaped damage.

The water tore up the track in forty-two places between Newark and Zanesville but only for short stretches in each instance. In one place a rock dropped on the track from an adjoining hill, and this had to be removed with dynamite. On account of these conditions the interurban line could not be operated into Zanesville for several days.

Cars of the company were caught by the flood at various points and were damaged by the water. The principal damage of this nature was done at the carhouse of the company at Mound Street, Columbus, which was flooded. A number of interurban cars were damaged by the water at this carhouse. Three cars were caught in the flood at Miamisburg. About six cars were caught in the flood at Hamilton, two of which were interurban cars. Three cars were in McDowell Street, Columbus, and caught the full force of the flood at that point. Several motor freight cars loaded with freight, which were all ready to leave Dayton, were caught by the flood at that point and damaged.

The lines of the Cincinnati Traction Company and the Ohio Traction Company were but little affected by the flood. Accounts of the experiences of these companies were published in last week's issue.

### FLOOD DAMAGE ON OTHER ROADS IN THE CENTRAL WEST

The Cincinnati & Columbus Traction Company had one span of a bridge across the Little Miami River washed away by the recent flood. This was part of a 460-ft. steel bridge at Milford, Ohio. The span which was destroyed was 160 ft. in length. One pier was undermined and toppled over. The bridge span was carried about 150 ft. down the river and was badly twisted and bent. Damage done to the track of this company by the water was inconsequential, although water covered about 5 or 6 miles of the track for one day. No water reached the power house, but when the bridge fell it carried down the overhead work, and on account of this situation operation was discontinued for two days on the western end of the line, although it was discontinued for only one day on the eastern end of the line. As two cars were left on the western end of the line, it was possible to begin operation and passengers crossed the Little Miami River by foot, using the county bridge for this purpose.

With the surface of the Wabash River 3 ft. above the level of the engine-room floor, satisfactory operation of the 12,000-kw generating station at Terre Haute owned by the Terre Haute, Indianapolis & Eastern Traction Company was maintained throughout practically the entire flood. A wall of sandbags was built around the building to deflect the current of the river, and a temporary brick wall was built across the building interior at each end. Centrifugal circulating pumps were used to remove the water which leaked into the basement.



# The Oakland, Antioch & Eastern Railway, California

A New 1200-Volt Line Which Reaches San Francisco by Ferry—The Coast Range Is Pierced by a Tunnel 3458 Ft. Long

Interurban electric systems are fast supplanting the steam railway in the vicinity of San Francisco. Work will be begun in the near future on many such projects. Among these may be mentioned the Peninsula system between San Francisco and San José and the Key Route extension be-

points to San Francisco instead of charging the same fare to either San Francisco or Oakland, as is customary on the Southern Pacific and Santa Fé lines from Sacramento and the interior valleys. The Oakland Chamber of Commerce greatly favors this charge.

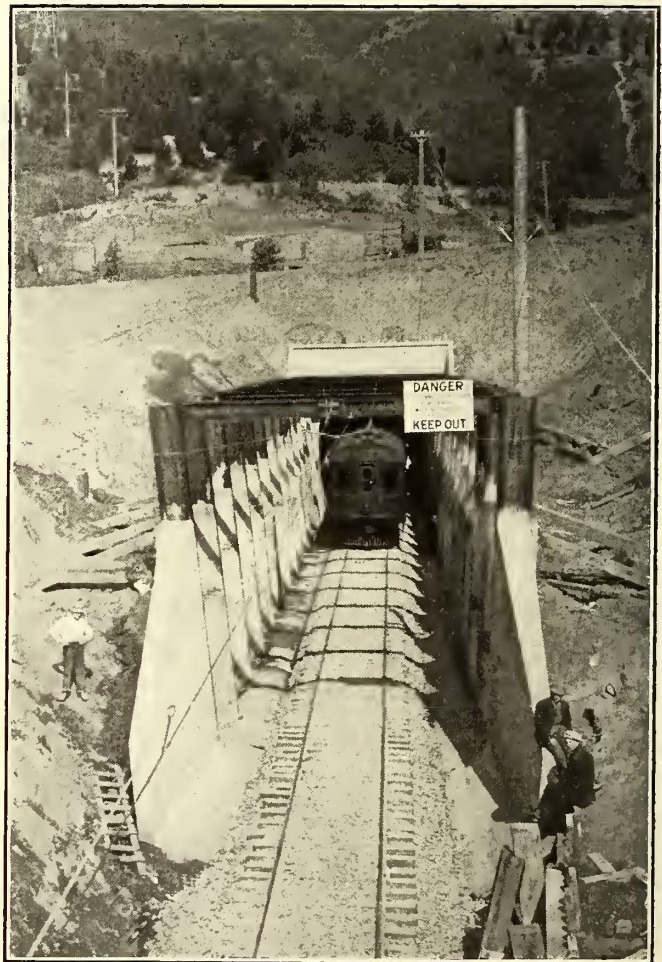
From the main Oakland depot at Fortieth Street and Shafter Avenue, near the Key Route's Piedmont terminus, the Oakland, Antioch & Eastern line extends up Shafter Avenue and crosses the north arm of Lake Temescal. Thence it winds up Shepherd Canyon on a 3 per cent grade to the Redwood Peak Tunnel, which pierces the Coast Range for a distance of 3458 ft. Most of the tunnel is through solid rock, and all that is not is lined with reinforced concrete 24 in. in thickness on the sides and 18 in. in the arch, as shown on the accompanying section drawing. Located at the east portal is the largest of the five substations the equipment of which is described below. From the summit of the Coast Range the interurban passenger



Oakland, Antioch & Eastern—1200-Volt Catenary

tween Oakland and San José, each 50 miles in length; the Ocean Shore Railroad from San Francisco to Santa Cruz, covering a distance of 65 miles, now operated part way as a steam road at a negligible profit; the Fresno & Monterey Railroad, which will very materially shorten the distance from the center of the San Joaquin Valley to Tidewater; the Northern Electric Company's line from Sacramento to Vallejo, which, with the Suisun and Vacaville extensions, will be over 60 miles in length, and the Oakland, Antioch & Eastern Railway, now almost completed. On April 7 the last-named company expected to inaugurate regular train service between Oakland and Bay Point, Contra Costa County, a distance of 31 miles. This is merely preliminary to running by July 1 through trains between Oakland and Sacramento, 85 miles distant.

The route between these two cities is shown on the map on page 728. A traffic agreement has been made with the Key Route which provides for the use by the Oakland, Antioch & Eastern trains of the Key Route tracks upon the 2-mile Key Route pier, and Oakland, Antioch & Eastern passengers will be carried to and from San Francisco on the Key Route ferryboats. The regular Key Route fare between San Francisco and Oakland is 10 cents. An innovation is being made by the Oakland, Antioch & Eastern in adding the amount to the price of tickets from interior



Oakland, Antioch & Eastern—Portal of 3458-Ft. Tunnel

can obtain a view which is not often excelled even in California, noted for its magnificent scenery.

From Bay Point across Suisun Bay to Chipp's Island the Oakland, Antioch & Eastern Railway proposes to build a bridge 10,000 ft. in length and 70 ft. high over the navigable portion of the stream. The estimated cost of this bridge is \$1,500,000. Borings have been made to test the bearing



capacity of the foundation beds, and work has begun on one of the piers. While this bridge is being constructed, a ferryboat will be used to transport trains across Suisun Bay. The boat is 185 ft. long, 57 ft. beam at deck, 38 ft. beam over frames and 590 gross tons. Its capacity will be six loaded passenger cars or eight freight cars. It will be operated by an eight-cylinder, 500-hp gas engine, driving a

The Oakland, Antioch & Eastern will enter Sacramento by the M Street bridge, owned partly by that company, partly by the Northern Electric Railway and partly by the counties of Sacramento and Yolo. The passenger depot will be located at Third and I Streets, and the freight depot at Second and M Streets.

Between towns a speed of 60 m.p.h. will often be main-



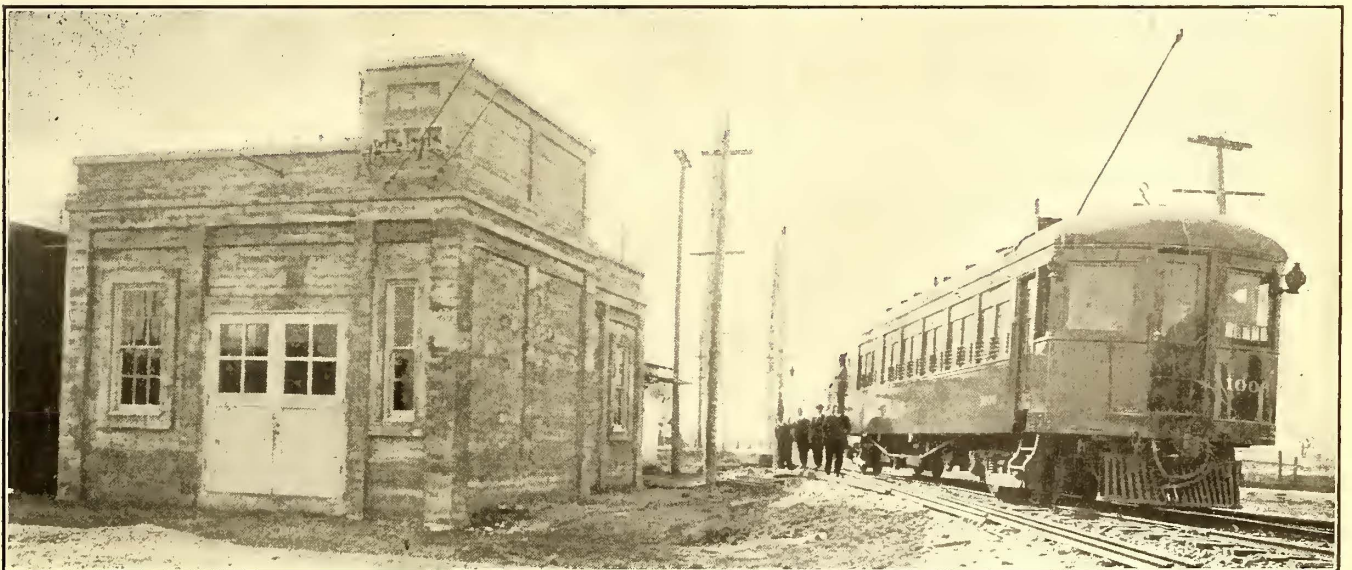
Oakland, Antioch & Eastern—Typical Cut

6½-in. shaft, with a universal coupling at each end of the engine. This boat is noteworthy as it is one of the few gas-operated boats in the world used for car transportation. The ferry slips are 89 ft. long, 24 ft. wide and designed for three tracks. The two aprons are all steel, 65 tons each, operated by counterweights and water tanks.

Across Yolo Basin the road is carried on a trestle 13,900 ft. long. In the center of this trestle a drawbridge has been erected across Montezuma Slough. The timber trusses are of the Howe type. There is a clear opening of 109 ft., and the draw is operated from land by remote control, a 1200-

tained. The road has been equipped with automatic block signals by the Union Switch & Signal Company.

Power will be supplied by the Great Western Power Company, whose main power house is on the Feather River, 18 miles north of Oroville. Five substations will be required for the service of the Oakland, Antioch & Eastern Railway. They are 17 miles apart and are located at the east portal of Redwood Peak tunnel, at Concord, Montezuma, Main Prairie and Glide's Levee respectively. The standard substation equipment will consist of one 750-kw Westinghouse motor-generator set and switchboard, one



Oakland, Antioch & Eastern—Substation and Car

volt, 15-hp motor supplying the power, which is transmitted by submarine cable. All of the roadbed between Chipp's Island in Suisun Bay and Sacramento has been completed. It is heavily ballasted and will be oiled to prevent dust. The laying of the rails is progressing rapidly. These rails will be of ferro-titanium alloy, 70 lb. per yard, A. S. C. E. standard.

1300-volt interpole d.c. generator rated at 514 r.p.m., one 1080-hp synchronous 11,000-volt, three-phase, 60-cycle motor, with one 18-kw, 125-volt d.c. exciter on shaft, one switchboard equipped with one synchronous motor panel, one d.c. general panel and three d.c. feeder panels. The substation at Redwood Peak, which will have to provide for the heaviest load, is equipped with two complete sets of



this equipment, while the other four substations have but a single set. There will also be one portable substation of 350-kw capacity.

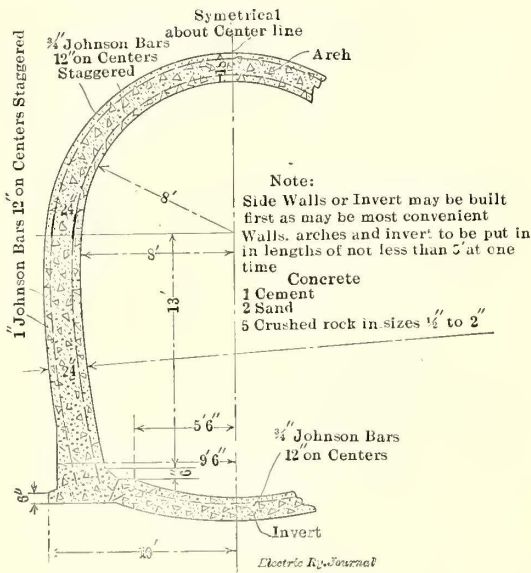
Overhead catenary construction is of the Westinghouse type, 1200-volt No. 000 trolley, 7/16 Siemens-Martin steel messenger, with a 600,000-circ. mil aluminum feeder. Until the completion of the bridge across Suisun Bay current

and will be provided with a well-appointed buffet. All cars are equipped with four 140-hp, 600-1200-volt d.c. interpole railway motors, with Westinghouse HL control and two dynamotor compressors. The trucks are C- $\Sigma$ -P standard, "trunk-line" type.

The heavy freight traffic will be handled by two Baldwin-Westinghouse 50-ton electric locomotives. Each is equipped with four 160-hp, 600-1200-volt d.c. interpole motors, HL control, and two dynamotor compressors. As the freight traffic develops additional locomotives will be added.

The Central California Traction Company operates an electric line between Stockton and Sacramento. A traffic agreement exists between the Central California Traction Company and the Santa Fé Railroad. It is reported that the Oakland, Antioch & Eastern Railway intends to establish a connection with the Central California Traction Company by building an extension from Antioch to Stockton. This fact, as well as the close relations existing between the road and the Key Route, as also between the Santa Fé and Key Route, is responsible for a general impression that the Oakland, Antioch & Eastern is controlled by the Santa Fé Railroad. The officials of the Oakland, Antioch & Eastern are S. Naphaly, president; W. Arnstein, secretary, and H. Mitchell, general manager. The directors are Henry T. Scott, I. W. Hellman, H. C. Breeden, B. Corbet and A. W. Maltbie. J. G. White & Company, New York, were the engineers and in charge of construction.

Residents of the fertile valleys between the Coast Range and Sacramento regard the new road as the forerunner of a new era of prosperity.



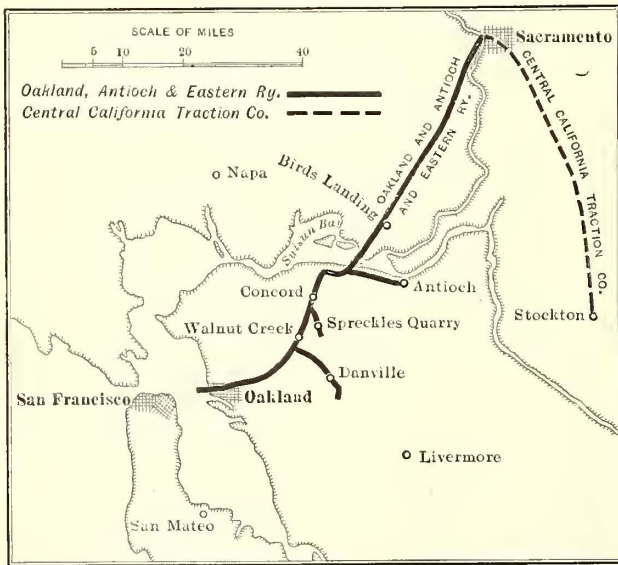
Oakland, Antioch & Eastern—Concrete Tunnel Section

will be transmitted from Bay Point beneath the surface by two submarine cables, 250,000 circ. mils, 3/32-in. Para rubber taped, wound with 1/16-in. varnished cloth and inclosed in 7/8-in. plain lead sheath, with No. B. W. G. galvanized armor, and a jute and lime finish over all. Two telephone cables will be laid beside the power cable. Each will consist of two pairs of No. 16 B. & S. G strand, insulated with three wraps of dry paper, 3/32-in. lead sheath and No. 10 B. W. G. galvanized armor.

PORTABLE ELECTRICAL INSTRUMENTS

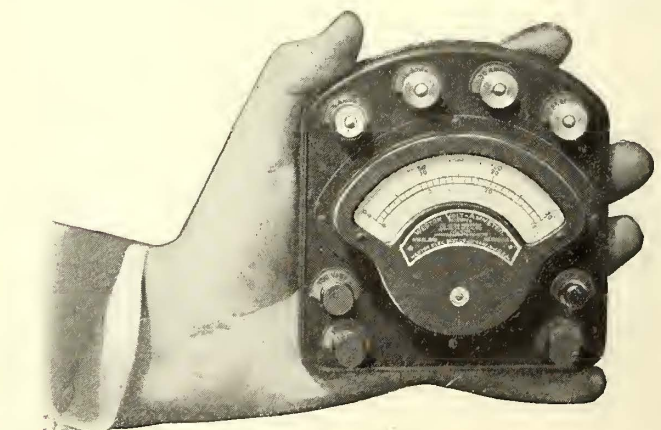
The Weston Electrical Instrument Company, of Newark, N. J., has recently developed and placed upon the market a complete line of miniature direct-current instruments of the Weston permanent-magnet movable-coil type for the measurement of current and voltage. They are made in both portable and switchboard forms and are very compact, the portable type having outside dimensions of 4.4 in. by 4.6 in. The instruments weigh less than 1 lb. each and may easily be carried in the pocket.

The accompanying illustration is one-half the actual size of the triple-range portable volt-ammeter, model 280. By means of this instrument any current from 1/20 amp to



Oakland, Antioch & Eastern—Map

The company will operate fourteen standard cars and two parlor cars. The former are 56 ft. in length over all, 10 ft. wide, and are divided into express, mixed passenger and smoking compartments. There is seating capacity for fifty persons. The cars are provided with electric fans for summer and electric heaters for winter. Electric lights will overhang every seat. The parlor cars, which are to be attached to the express trains, will seat sixty passengers



Portable Volt-Ammeter

30 amp and any voltage from 1/50 volt to 150 volts can be measured. Railway signal engineers and all those who must carry instruments from place to place for general testing and inspection work will appreciate the compact form and light weight of this type, and, furthermore, the combination volt-ammeter with multiple ranges reduces the number of instruments required to be carried. These instruments are especially useful in telegraph and telephone



testing, and in general for all work where small d.c. currents and comparatively low potentials are used.

A switchboard form of meter having the same general characteristics as the portable form just described is also manufactured. These are provided with a pear-shaped pointer tip to enable readings to be made at a distance. They are all single-range, but are made in ranges increasing by small steps from 50 milliamp to 30 amp in the case of ammeters; and from 50 millivolts to 150 volts in voltmeters. This form of instrument is useful for all purposes where size and weight are important factors, and also where the cost of installation must be kept low.

Another type is the switchboard volt-ammeter, which is designed especially for use on storage battery charging outfits where it is desired or is necessary to use a single instrument to indicate both volts and amperes. For instance, the meter normally indicates the charging or discharging current, but by pressing the contact button the voltage of the cell or battery may be read on the same scale.

Another instrument included in the line is a battery-testing voltmeter, which is provided with a steel point at one of the terminals to facilitate making contact to one of the plates or terminals of the cell to be tested. The other terminal consists of a flexible lead also provided with a point. Knife-edged pointers are provided and the scale has the zero in the center, so that the voltage may be read regardless of the polarity.

### REPLACING OVERTURNED TRACK

The accompanying illustration shows graphically not only the havoc caused to railway property in the Central States during the recent flood but also the methods employed to replace a section of overturned track. Although part of the main line of the Louisville & Nashville Railroad (steam), the view is typical of electric railway conditions in the devastated country. The section overturned was about  $1\frac{1}{2}$  miles in length near Maunie, Ill., and the method of replacement was to sink guy anchors at intervals of about 50 ft. and at an angle of about 45 deg. and then to haul the track back into position by block and falls attached to a chain on the end of the guy anchor. Twelve 12-in. Matthews guy anchors were furnished for this purpose by

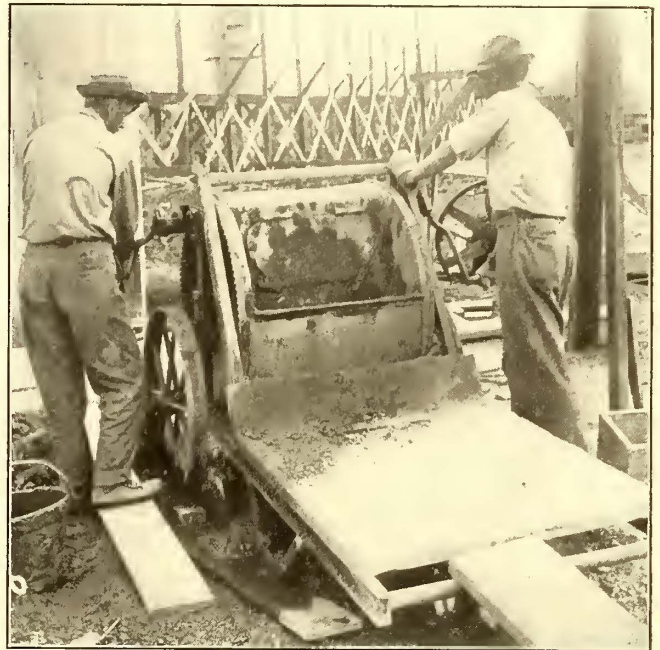


Replacing Railroad Tracks Overturned by the Flood

the manufacturers on a hurry order, and at the point of use these anchors were screwed down until the eyes were under the water from 18 in. to 30 in. After a section of track had been rolled back upon the right-of-way by these means, as shown in the view, the anchors were unscrewed, taken ahead, screwed down again, and another section of track was replaced. In this way 1500 ft. of track was put back in position in a day.

### HAND-OPERATED CONCRETE MIXER.

A mixer for handling concrete in small quantities such as would be required for pavement repairs, sidewalks, culverts or light foundations has been placed on the market by the T. L. Smith Company, Milwaukee, Wis. The machine is operated by hand, and as it is extremely light and



Hand-Operated Concrete Mixer, Showing Loading Platform and Charging Door

compact it may be moved easily from place to place in accordance with the requirements imposed by a series of small and widely separated jobs. The capacity is  $2\frac{1}{2}$  cu. ft. to the batch.

Essentially the mixer consists of a drum and a feeding platform mounted on a two-wheel truck made up of structural steel shapes. The drum is made of No. 14 gage steel with cast heads. It is 3 ft. in diameter and 2 ft. 8 in. in length and has a charging door 2 ft. 4 in. long by 10 in. wide. All moving parts have been eliminated from the interior, as well as corners which might collect concrete during the mixing process.

The drum is fixed upon a  $1\frac{1}{2}$ -in. steel shaft which revolves in interchangeable babbitted bearings. It is driven by means of two internal gears cast integral with the heads at each end of the drum, and these gears mesh with pinions mounted on two short hand-crank shafts, which are located at either end of the machine. The feeding platform is 3 ft. 7 in. wide and 3 ft. in length and is made of  $1\frac{1}{2}$ -in. planks resting on 3-in. channels. The whole mixer is mounted on 30-in. wheels which have 3-in. treads. The weight complete is 1000 lb. and the over-all dimensions are: height, 4 ft. 5 in.; width, 4 ft.  $2\frac{1}{2}$  in., and length, 7 ft. 6 in.

The manufacturers state that three slow turns of the drum will mix the concrete aggregate as thoroughly as it can be mixed in a large power mixer. The force required to do the work is, however, much smaller than would be needed in case the mixing was done by hand. It is reported that from 30 cu. yd. to 35 cu. yd. of first-class concrete can easily be turned out with the machine in ten hours.

Representatives of the British government Board of Trade recently inspected the new trackless trolley system operated by the Stockport Corporation, Stockport, England. The cars are in use upon a route  $1\frac{3}{4}$  miles in length, the fare for the distance being 2 cents.



# News of Electric Railways

## Terms of Settlement of Buffalo Strike

As a result of a conference held in the office of Mayor Fuhrmann of Buffalo on April 11, 1913, between the officers of the International Railway and representatives of the employees an agreement was reached by which the strike of the employees, which had been in progress since April 6, 1913, was terminated and the men returned to work on the morning of April 12. The company has maintained the principle for which it contended, namely, the right to deal directly with its own employees as such, and in the company's dealings with the men in the future, as in the past, they will be received as employees. The text of the agreement under which the men returned to work was signed only by President Connette and employees of the company. The demand for higher wages and modified working conditions was to be taken up by a committee of the men and the company within five days from April 11. All questions upon which an agreement is not reached by this joint committee from the company and the men will be referred to a board of arbitration of three members, one chosen by the men, one by the company and the third by these two. If the two arbitrators fail to agree upon the third member of the board, the place automatically goes to Mayor Fuhrmann within a specified time. The findings of the majority of this board are to be binding on both sides and must be announced within fifteen days after all the testimony has been taken. The employees and the officers of the Buffalo Southern Railway and the employees and the officers of the Buffalo & Lake Erie Traction Company signed an agreement similar to that between the International Railway and its employees. The full text of the agreement which has been entered into between the International Railway and its employees follows:

"It is hereby agreed as a basis of settlement:

"First—All employees who were in the employment on Saturday, April 5, 1913, to be returned to the service in the positions and with the seniority held by them at that time, with a leeway of forty-eight hours for such employees as may not be within calling or notifying distance to return and take their positions.

"Second—When the employees have returned to work, and within five days after having signed this agreement, the company is to take up with a committee of the employees all complaints, grievances and the working conditions for the future. Included in these complaints shall be the cases of the men discharged within thirty days prior to April 5, 1913. If they cannot reach a satisfactory agreement through these conferences, all questions in dispute between them shall be submitted to a board of arbitration. Either party upon being notified in writing by the other party that arbitration is desired shall name its arbitrator within forty-eight hours after having received such written notice.

"Third—The board of arbitration is to be composed of three persons, the employees to select whomsoever they desire as their arbitrator, the company to select whom it desires. These two arbitrators thus selected shall select within five days from the date of their appointment the third arbitrator. In case of failure to select a third arbitrator within five days as specified, the Mayor of Buffalo shall become the third arbitrator. Within three days after the appointment of the third arbitrator, the board of arbitrators shall meet and continue in session until all disputes have been heard and decided.

"At the hearing before the board of arbitration either side may be represented by any one whom it desires, and after all evidence and arguments have been heard by the board of arbitration it shall within fifteen days formulate its award in writing and submit the same to both parties. The findings of the majority of the board of arbitration shall be final and binding on both parties.

"The expenses of the board of arbitration shall be borne as follows: Each party shall pay the arbitrator of its selection, and they shall jointly pay the expenses of the third arbitrator and such other expenses as may be incurred in the negotiations."

## Mayor Whitlock Reviews Franchise Negotiations

Mayor Brand Whitlock of Toledo, Ohio, in a communication to the North End Improvement Association of that city, has summarized the street railway situation in Toledo in part as follows:

"The Toledo Railways & Light Company is operating a part of its system by sufferance of the city and the rest under franchises expiring at various times in 1914, 1915 and 1916. Two years ago, when the first of the company's franchises were about to expire, negotiations for a settlement of the whole problem were opened at the company's request and carried on for months, but these were interrupted because the company's representatives were unwilling to go on with them during the various efforts at reorganization.

"Inasmuch as transportation is the very life of a city, the municipal authorities were loath to prohibit the operation of cars, and therefore the city solicitor proposed and drafted an ordinance providing that the company could operate its lines in those streets where the rights had expired only on condition that it reduce the fare on all lines, and as a result a tentative and informal arrangement was made by which 3-cent fares are charged during the morning and evening hours, and at other times tickets are sold at the rate of six for a quarter, with universal transfers.

"At the time this arrangement was made it was provided, too, that certified accountants should examine the records of the company to ascertain the effect on its receipts of the reduction in fares. The accountants have examined a period covering nine months of operation under this reduced fare and are now examining the remaining three months, so that the entire year may be brought under notice and the results under all sorts of conditions studied. The reports of the accountants thus far show a considerable stimulation of traffic as a result of low fares, and tend at least to confirm the opinion so often expressed that with a proper routing of the cars and with a proper valuation 3-cent fares would be practicable.

"The municipal authorities have always been willing to have the company's properties evaluated and then to lay before the people the question of whether or not they desire to have submitted at referendum for their approval a franchise based on a rate of fare sufficient to enable the company to pay its interest charges, its taxes and operating expenses and a reasonable return on its actual investment.

"In the meantime the Council has appointed a committee charged with the duty of investigating the subject of municipal ownership with reference to Toledo at this time. Under all the circumstances it would be well; therefore, to await the report of this committee before final action of any sort is taken. When that report is made it may be entirely possible to submit to the people at the same election, in the form of alternative propositions, the question of municipal ownership and operation of the railroad and an ordinance granting the company a franchise.

"I think that when the franchises have expired the company will find the people determined to adopt municipal ownership as the only solution of the problem. I am sure that this will be the ultimate solution, come when it may, though, of course, I do not know when that will be. It is for the people themselves to say."

## Employees' Stores in Milwaukee

As a result of the inquiry which it has been conducting among its employees into the cost of living with the idea of securing information and data from which to evolve a plan of benefit to the men, The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., has decided to establish stores at five of its carhouses where farm produce cultivated on about 700 acres of land along the company's lines will be sold to the employees. Later groceries, canned goods, shoes and other necessities may be sold. This plan of the company was referred to briefly in the *ELECTRIC*



RAILWAY JOURNAL of Oct. 26, 1912, page 921. R. B. Stearns, vice-president of the company, explains the purpose of the company as follows:

"It is not our intention to go into competition with the stores of the city. We believe our duty to the employees of the company is to provide means for them to obtain produce for their families at a great reduction in cost. Nothing will be sold to outsiders. We have prepared statistics which show that 708 acres of land will be necessary to raise potatoes, cabbages, onions and other vegetables needed for the tables of the families of the men in all branches of work with the company. Only such vegetables will be grown as can be stored easily after harvest in the fall. These will be shipped from the farms along the right-of-way to the carhouses where the stores will be established. Then those men with identification cards can obtain whatever they want. We do not contemplate going into the slaughtering business. The meat will be bought in large quantities and sold at cost.

"The necessity for such an enterprise for the benefit of our employees has been shown in our investigation. There is a material difference between the cost of production and the cost price to the consumer. Some one gets this money, as I told the representatives of the grocers and butchers when they visited me to protest against this venture.

"One reason for the high cost of produce is that the farmer ships his produce to the Chicago wholesaler, who ships to the Wisconsin wholesaler, who in turn sells to the Wisconsin retailer. Every one gets his profit. The retailer has to provide delivery wagons, which add to the cost of the merchandise or produce, and by the time the consumer comes to pay the bill there is a wide margin between the production cost and the consumer's bill.

"The retailers are also forced to protect themselves against the persons who obtain goods on credit and then do not pay. Perhaps 10 per cent of their customers do not pay regularly or at all. This must be taken out of the pockets of those that do pay. In our stores everything will be sold for cash. There will be no delivery. Everything will be sold for cost of production."

#### Request for Increase in Ordinance Allowances in Cleveland

J. J. Stanley, president of the Cleveland (Ohio) Railway, requested at the meeting of the Cleveland Council on April 14, 1913, that the ordinance allowances for maintenance and operation be increased to 7 cents and 12½ cents per car mile respectively. This request was transmitted to the legislative body by Street Railway Commissioner Witt, who also presented two letters containing a history of the negotiations with the company on this point. Mr. Witt stated that he had proposed to ask Council to increase the operating allowance to 12 cents per car mile for one year beginning May 1, 1913, if the company would consent to use accumulations in the accident fund to reduce the deficits that have accrued and to stay within the limit of 12 cents or any other limit hereafter set. This the company refused to do, as it is obviously impossible to foresee just what will be necessary in the future. Mr. Witt stated that under its franchise the company ought not to spend more than the ordinance allows and that he and other city officials had had several conferences with the officers of the company regarding this matter. The company officials state that they have been unable to give the service demanded without making deficits in these funds.

On Mr. Witt's assertion that the interest fund now amounts to more than \$700,000, Councilman Haserodt, chairman of the street railway committee, presented a resolution that the fare be reduced to the rate in the Tayler ordinance known as G, which would mean 2½ cents, with 1 cent for a transfer, not to be refunded. In reckoning the interest fund Mr. Witt has included the accident and some other funds maintained by the company. Both of these measures were referred to the street railway committee.

Officers of the company contend that the interest fund, if computed as it should be, is close to the \$300,000 mark, where the fare would be automatically increased, instead of reduced.

The employees of the company at a meeting on April

12 formulated a demand for an increase of wages from 27 cents and 30 cents an hour to 37 cents flat an hour, a nine-hour day, with eight hours' work on the night runs, abolition of tripper runs, additional time off for sleep for extra crews and pay for the ten minutes the men are required to be at the carhouse before they take out their cars. Charles E. Koontz, representing the union, states that the men are not concerned with the differences between the company and the city and that if their demands are not granted the men will ask for arbitration. Mr. Stanley is said to have informed the men some time ago that the company could not increase wages. The employees who objected that the city might accuse the company and the men of working together to secure larger ordinance allowances were overruled.

In working out plans by the charter commission, Mayor Baker presented a draft of sections relating to public utilities in which the price for purchase by the city was to be fixed at the cost of reproduction plus 10 per cent. In addition, he suggested that in case a fifty-year franchise is granted the reduction in price each year should be such that at the end of fifty years the railway would automatically become the property of the city. This plan was opposed by some of the members, who said that it would amount to a tax on gross receipts, an idea that is not favored at this time.

The Mayor threatens immediate purchase of the property of the Cleveland Railway if the city loses in the arbitration of the demand for an increase in allowances for maintenance and operation.

Mr. Stanley has made a counter proposition to the motor-men and conductors, proposing the open shop.

#### Detroit's Municipal Ownership Amendments Carried

The charter amendment providing for municipal ownership of street railways was approved by the electors of Detroit, Mich., on April 7. The proposed increase in the bonding limit of the city and the amendment to place city employees under civil service were also approved. All three apply to the street railway situation. In an interview Mayor Marx said:

"I have been asked what will be the first step we shall take in preparation for municipal ownership and operation of the street railway system. In reply, I wish to say that within the next few weeks I shall appoint a street railway commission, and the people of Detroit may rest assured that the men to whom this great responsibility will be delegated will be those in whom they will have full confidence."

On the day following the election Mayor Marx announced that William H. Maybury, William T. Dust and Joseph Stringham will be appointed street railway commissioners as soon as the Verdier home rule act is sustained by the courts. Upon this commission will rest the responsibility of spending the \$10,000,000 which the voters have made available as the initial expense toward the purchase of the street railway property for municipal operation. It is said that \$100,000 will be put into the hands of the commission at once to be expended in valuations and other work that must precede the actual purchase of property. William H. Maybury was formerly commissioner of public works of the city. Mr. Stringham is an engineer. Mr. Dust has had long experience in municipal affairs and has been a close student of transportation. A secretary will be appointed to this commission.

A very important point in the injunction case brought in the Wayne County Circuit Court has not been decided, although the court allowed the vote to be taken on the charter amendments and the bond issue. This relates to the appointment of the street railway commission. In this case the plaintiffs, George H. Barbour, Fred T. Moran and Charles A. Ducharme, asked that the city be restrained from issuing bonds for the purchase of the railway property. The court merely allowed the city to proceed with the vote on the charter amendments, but did not rule on the other points.

Corporation Counsel Lawson and Attorney Alfred Lucking, who have returned to Detroit from Washington, announced that steps had been taken before the United States Supreme Court to bring about an early hearing of the Fort



Street case. They made three motions before the Court, as follows:

First—To dismiss the writ of error and appeal in this cause for the reason that no federal question is involved in the case which would authorize or justify an appeal to this court from the Supreme Court of the State of Michigan.

Second—In case the foregoing motion be denied, city of Detroit moves to affirm the judgment of the Supreme Court of Michigan for the reasons that it is manifest that the appeal is taken for delay only and the questions involved are so frivolous as to need no further argument.

Third—In case both the foregoing motions should be denied motion is made to advance the cause.

The attorneys for the company are to have three weeks in which to file a brief in the case, according to Mr. Lawson.

The provisions of the municipal ownership amendment were summarized in the *ELECTRIC RAILWAY JOURNAL* of March 22, 1913, page 557. The section covering the rate of fare was given in full as was also the question upon which the voters were asked to express their opinion.

**Chicago Elevated Railways Wage Decision**

On May 31, 1912, the working agreement between the employees and the five elevated railways of Chicago expired. Some weeks prior to the expiration of the old contract negotiations were commenced for a new contract. As a satisfactory agreement could not be reached resort was had to arbitration as provided in the old contract. Wallace Heckman was selected as arbitrator to represent the elevated companies and Jacob C. Lebosky was selected as arbitrator to represent the men. The effort made by these arbitrators to adjust the points of difference without selecting a third man has resulted in their reaching a satisfactory agreement. Mr. Heckman and Mr. Lebosky have worked continuously since September, 1912. The conditions existing heretofore on the different roads made a solution especially difficult.

The decision of the arbiters was read at a conference of the representatives of the companies and the employees on April 12. The companies were represented at this conference by President Britton I. Budd; E. C. Noe, general manager, and G. P. Seely, assistant general manager. Franklin B. Hussey acted as attorney for the companies. The employees were represented by John McIntosh, Edward McMorrow and a committee of five representing the five roads involved. The old agreement stands except for slight changes in the wages and the hours of some of the employees. The new and the old rates of pay for the employees of the transportation department of the companies follow:

NEW RATES

	Rate per Hour, Cents
Regular motormen:	
First year .....	30½
After first year .....	34
Extra motormen:	
First year .....	28
Second year .....	28½
Third year .....	29½
Regular conductors:	
First year .....	25½
After first year .....	27
Extra conductors .....	24
Regular guards .....	24
Extra guards:	
First year .....	21
Second year .....	22
Third year .....	23
After three years .....	24

OLD RATES.

Regular motormen:		
First year .....	28	
After first year .....	32	
Extra motormen .....	25	to 28
Regular conductors .....	24	to 25
Extra conductors .....	22½	to 23½
Regular guards .....	22	to 23
Extra guards .....	19	to 22½

Ticket agents were granted an increase of from 8 cents to 25 cents per day. The wages of shopmen were increased from 1 cent to 1½ cents per hour, and their hours were reduced to nine per day. Power house employees were granted an increase of from 1 cent to 1½ cents per hour, and the hours of work of the latter class of employees were reduced to ten per day.

**Proper Capitalization of Flood Damage Favored in Ohio**

O. H. Hughes, of the Public Service Commission of Ohio, says that the following statement attributed to him by some of the daily papers with regard to the attitude of the commission with respect to the capitalization of the improvements to the public utilities necessitated by the flood damage is in substance correct, although he has not in mind any well-defined plans looking to the solution of the problem in detail:

"We want to help the public utilities of Ohio. They are engaged in a public duty, and those companies that have sustained great damage through the floods should be permitted to issue securities to cover the damage, instead of being compelled to make their replacements out of surplus and future earnings. If the laws of the State are not sufficiently broad now to give the commission authority, the Legislature now in session ought to give the proper authority. At the same time, in view of the blow which many of these properties have also received in the loss of present and future earnings, the commission ought also to have the right to adjust rates to help make up losses. This would have to be very carefully handled, however, and entertained only in especially severe cases.

"I am in favor of a sane policy at all times—a live and let live policy, as it were, with equity and justice as the true guide. The reconstruction problem confronting the properties in Ohio at this time is very complex and should be solved in the light of reason."

Governor Cox of Ohio was also quoted as follows by some of the daily papers:

"Our policy should be one of sympathetic construction. Companies serving the public should be permitted to capitalize the replacements which they are forced to make through flood damages and spread the payments through a term of years. Some plan can be worked out that will cause the minimum of hardship."

**Organization of New York Municipal Railway Corporation**

The New York Municipal Railway Corporation formed by the Brooklyn Rapid Transit interests to facilitate participation in the proposed dual system of rapid transit, has organized as follows: A. N. Brady, chairman of board; T. S. Williams, president; C. D. Meneely, vice-president, secretary-treasurer and member of board; J. Horace Harding, vice-president; W. S. Menden, chief engineer; C. E. Roehl, electrical engineer; W. G. Gove, engineer of car equipment; J. J. Dempsey, transportation engineer; Lincoln Van Cott, purchasing agent; G. D. Yeomans, general counsel; Howard Abel, comptroller; J. H. Bennington, in charge of real estate purchase and sales. The chief engineer will supervise and direct all construction and equipment, including plans and specifications therefor. The chief engineer, purchasing agent, general counsel, comptroller and real estate manager will report to President Williams. The electrical engineer, transportation engineer and engineer of car equipment will report to the chief engineer. H. A. Bullock as secretary is in charge of obtaining the consents of abutting property owners, releases of property owners, etc. The directors of the company are: A. N. Brady, W. G. Oakman, J. H. Harding, J. N. Wallace, T. S. Williams, Charles A. Boody, James C. Brady, A. K. Wood, Clinton D. Burdick, George W. Davison, N. F. Brady, Bernard Gallagher and C. D. Meneely.

**Rapid Transit Progress in New York**

Plans for the connection of the existing subway with the new subway in Lexington Avenue have been changed by the Public Service Commission for the First District of New York so that the junction will be made south of Fortieth Street instead of near Forty-second Street as originally contemplated. The first plan involved the passage of the new subway under private property on both sides of Forty-second Street, and it developed that the obtaining of easements would be very expensive. On this account the Board of Estimate and Apportionment refused to approve the first plan. The Public Service Commission then adopted a plan for a connection through Fortieth Street. According to this plan the route just touches private property



where it cuts the corners of blocks at Park Avenue and Fortieth Street and Lexington Avenue and Fortieth Street. The Board of Estimate and Apportionment has not yet acted upon this plan.

The Interborough Rapid Transit Company has submitted to the Public Service Commission for the First District a bond in the sum of \$1,000,000 for equipment, maintenance and operation under the dual system contract recently signed.

The New York Municipal Railway Corporation (Brooklyn Rapid Transit), having already filed its bond for \$1,000,000, has also made a deposit of \$1,000,000 with the comptroller of the city, thus completing the security required under its part of the contract for new subways. This deposit is to secure the company's contribution toward construction and its purchase of equipment, in accordance with the provisions of the dual system contracts. The contract permits the deposit of either cash or approved securities, and in this case the company loaned to the city, through the comptroller's office, \$1,000,000 in cash to be used in anticipation of the issue of corporate stock for water supply purposes. The city gave the company a note for the amount maturing May 15 next and bearing interest at 4¼ per cent per annum. This note the company offered and the Public Service Commission approved as its deposit under the security provisions of the dual system contracts. When the note matures it is understood the company will purchase \$1,000,000 in city bonds and substitute the bonds for the note as its deposit.

#### Electrification of Canadian Northern Pacific Railway Feeders

The Canadian Northern Pacific Railway has decided to electrify its branch lines from Kamloops to Vernon, B. C., and according to R. A. Barton, the engineer in charge of the preliminary development of the Couteau Power Company near Ducks, B. C., just north of Kamloops, the Canadian Northern Pacific Railway has acquired the charter and rights of the Couteau Power Company, which contemplated spending \$2,000,000 in development work. The line from Kamloops to Vernon, Lumley and Kelowna, in British Columbia, will be 132 miles long and is under construction as a branch line to the Canadian Northern Pacific Railway or the Canadian Northern Railway. The Canadian Northern Railway is linking up a transcontinental line across Canada. At present the lines are operated separately, the Canadian Northern Quebec Railway in the Province of Quebec, the Canadian Northern Ontario Railway in Ontario, the Canadian Northern Railway and the Canadian Northern Alberta Railway in the prairie provinces, and the Canadian Northern Pacific Railway in British Columbia. During 1912 track was laid on the Canadian Northern Pacific Railway from Sumas to Hope, 41.64 miles, making the total track laid on the line 78.25 miles. The line from Hope to Yellowhead Pass, 421.82 miles, is under construction.

#### Increase of Wages at Philadelphia

Co-operative Bulletin No. 10 of the Philadelphia (Pa.) Rapid Transit Company, just issued, states that the accumulations in the 22 per cent fund now permit an increase of the wages of motormen and conductors, effective May 1, as follows: New men, 23 cents; after one year's service, 24 cents; after two years' service, 25 cents; after three years' service, 26 cents; after four years' service, 27 cents; after five years' service, 28 cents. The present scale of wages which was effective Jan. 1, 1913, is as follows: New men, 22½ cents; after one year's service, 23½ cents; after two years' service, 24 cents; after three years' service, 25 cents; after four years' service, 26 cents; after five years' service, 27 cents. The company pays for a minimum of nine hours on all regular runs and has approximately 7000 motormen and conductors in its service. The bulletin mentioned, which is issued to all trainmen, after making this announcement, discusses the improvements made by the present management in the status of the men under the heading "co-operation versus conflict" and shows that the wages have increased much more during the period of peace under the Stotesbury régime than because of the strikes during 1909 and 1910.

#### Adverse Reports by City Engineer Regarding Extension of San Francisco Municipal Line

A report on the cost of municipal railway lines which have been proposed for immediate construction in order to provide adequate transportation facilities for the Panama-Pacific International Exposition has been filed by City Engineer O'Shaughnessy of San Francisco, Cal., with the Board of Public Works and has been transmitted with the board's approval to the Board of Supervisors, which has referred it to the public utilities committee. The city engineer says:

"From the estimates it is apparent that the cost of construction and equipment of street railways to provide adequate transportation for the large number of persons who will desire to attend the exposition during the few days of maximum attendance, without the co-operation of the United Railroads, will far exceed any possible profit to be derived from the operation of such street railways, and that after the close of the exposition the city will be left with a large amount of equipment on hand for which no profitable use can be found for a number of years afterward."

After figuring the probable average attendance, the number of workmen and other factors of exposition travel, the city engineer says:

"This makes the total income to be derived from the transportation of passengers to and from the exposition, for the year preceding the exposition, \$300,000; for the 288 days during which the exposition will be open, \$864,000, and for the year following the exposition, \$75,000, a total of \$1,239,000. The operating expenses will average two-thirds of the gross income, leaving one-third, or \$413,000, as the gross profit to be derived from the estimated traffic."

Mr. O'Shaughnessy gives the cost for three different methods of operation, the first for ordinary transportation conditions, such as will exist after the close of the exposition; the second to provide for the extraordinary conditions which will prevail during the exposition period, and the third for joint operation on the proposed lines by the municipality and the United Railroads. The estimates under the third method include the cost of connections with the United Railroads.

**Little Damage to Erie Railroad Electric Division.**—The Rochester electric division of the Erie Railroad Company, Rochester, N. Y., reports that its electric service was suspended three days during the recent flood, with 90 per cent of the route affected. There was no interruption to the supply of power. The damage to the property was trifling.

**Meeting to Consider Additions to Standard System of Accounts.**—The committee on a standard classification of accounts of the American Electric Railway Accountants' Association will meet representatives of the Interstate Commerce Commission at the Hotel Marlborough-Blenheim, Atlantic City, N. J., during the week beginning April 21, 1913, to consider the proposed additions to the standard system of accounts.

**Another San Francisco Report.**—B. J. Arnold has just submitted another exhaustive report to the Mayor and Board of Supervisors on the street railway conditions in San Francisco. He makes many recommendations for changes and improvements to take care of the immediate future, and outlines other improvements and extensions which he says will be necessary within the next twenty years. He urges prompt action by the city upon the transit situation and says that the present uncertain condition is being capitalized by surrounding communities to the detriment of the city.

**Relief for Congestion in Los Angeles.**—It is announced that the Pacific Electric Railway, Los Angeles, Cal., is prepared to proceed with the construction of its proposed elevated railway. The plans involve the construction of an elevated line from the rear of the company's depot at Sixth and Main Streets, Los Angeles, over which will be routed the cars of the Southern division and those running to Pasadena, the San Gabriel Valley and the various other lines of the Eastern division. Practically all of the interurban cars will be removed from downtown Main Street. The section of the road which it is proposed to build at this time will be constructed over private right-of-way.



**Charter Conference in Los Angeles.**—Immediately after the adverse vote on the Los Angeles charter on Dec. 3, 1912, the People's Charter Conference was organized with a view to getting amendments before the people in time for approval by the Legislature. The conference has reported eight separate amendments which purport to give the city increased power in the purchase and regulation of public utilities and the power of excess condemnation, when it shall be provided for by state law. Each of the nine members of the Council would be designated a committee of one to look after a division of the city's affairs. One amendment provides for a form of proportional representation in the Council.

**Chicago Partnership Receipts from Surface Railway Operation.**—By the terms of the ordinances under which the Chicago street railways are operating, the city is entitled to 55 per cent of the "net divisible receipts." The amounts which have just been paid to the city under this arrangement for the year ended Jan. 31, 1913, were \$1,413,404 from the Chicago Railways and \$1,116,588 from the Chicago City Railway, making total receipts \$2,529,992 for the year. For the six years these ordinances have been in operation the payments have amounted to \$10,326,391. The amount turned over by the Chicago Railways for the year 1912-13 was 7.2 per cent more than for the preceding year, while the increase in the payment from the Chicago City Railway was 6.5 per cent. Under the law the city must use the money received from this source to create a fund to purchase the properties or build subways.

**Subway Question Before Council of Providence.**—At a recent meeting of the committee on subways of the City Council of Providence, R. I., D. F. Sherman, vice-president of the Rhode Island Company, told the committee that the only way the company could improve its service in Providence materially was to operate in the congested district in a subway or on an elevated railway. The former was to be preferred. The opinion expressed by the committee was that if a subway system was built by the city for lease to the Rhode Island Company the company should pay the interest on the bonds issued to cover the expense of construction and in addition a sum yearly such as would retire the principal in from forty to sixty years. Mr. Sherman said that the Rhode Island Company would submit a proposal to the city if the committee would draw up accurate estimates of the cost of construction of the proposed subway.

## LEGISLATION AFFECTING ELECTRIC RAILWAYS

### CONNECTICUT

The House has rejected the bill to regulate fares on electric railways so that a person should pay 3 cents on entering a car and 2 cents more when provided with a seat.

### ILLINOIS

The public utilities bill, sponsored by Governor Dunne, contains the following salient provisions:

1. A commission of five members, the salary of each commissioner to be \$10,000 a year.
2. Abolition of the present State Railroad and Warehouse Commission.
3. Provisions for appeals to the Circuit Courts and then the Supreme Court from all rulings of both the state commission and the local municipal commission.
4. The law to become operative in all cities of the State under 25,000 population upon its going into effect, it to be left optional with the cities of more than 25,000 population as to whether they will avail themselves of the enabling legislation and establish a local commission for the regulation of all utilities.
5. Provision whereby cities of more than 25,000 population which have adopted the commission method of dealing with the utilities may surrender their rights and come under the state commission control.
6. Cities of more than 25,000 population, operating under a local commission, to have jurisdiction only over the local utilities within the municipal limits.
7. The regulation of the issuance of all stocks, bonds and securities of all corporations, local utilities or otherwise, to be controlled by the state commission.

8. The act not to apply to municipally owned utilities in any city, such as water works, gas and electric plants.

9. The powers of the commission to be made plenary and applicable to all public service corporations of every kind and character in Illinois.

10. The commission to be authorized to regulate the service of all public service corporations, with particular respect to schedules, quality of service and rates charged.

The utilities bill was introduced in both branches on April 16.

Despite the fact that Judge James A. Creighton of the Sangamon County Circuit Court at Springfield, Ill., has decided that the Illinois Railroad & Warehouse Commission has a right to carry out its order directing the Alton, Granite City & East St. Louis Railway to install toilets on its interurban cars between Alton and East St. Louis, the bill introduced into the Legislature by Senator Edmond Beall, Alton, providing for these conveniences on all interurban cars will be urged for passage. Senator Denvir's bill limiting the hours of employment of street railway motormen and conductors to ten hours which must be within twelve consecutive hours has been reported favorably out of the labor committee of the Senate.

### IOWA

The House has voted against the amended public utilities bill and there is little or no prospect of a measure of this kind passing at the present session.

### MASSACHUSETTS

The committee on street railways has sent in adverse reports upon the bills providing for state ownership of all street railways and upon the bill requiring companies to charge not more than half fare for pupils of any institutions of learning in traveling between their homes and school. The committee has reported a bill requiring all cars operated in the State on street railways to be equipped with an emergency lifting jack of a type to be approved by the Railroad Commission, with a maximum penalty of \$100 per violation. Chairman McLeod of the Railroad Commission appeared before the committee on street railways recently in executive session to consider the bill authorizing the New York, New Haven & Hartford Railroad to own and develop electric railways in western Massachusetts. During the conference Mr. McLeod pointed out that the contemplated extensions of the existing systems fall within the scope of heavy railroad construction and contended that as such they should be made as a part of the railroad company's system. The committee has before it at present five bills relating to street railway investments, in which it is proposed to attach as amendments substantially the stock and bonding features of the Washburn bill under the changes proposed by the savings bank interests of the State. One bill places the Railroad Commission in jurisdiction over investments of street railways in certain cases. Interest centered during the week upon the final arguments before the committee on street railways on the so-called nine-hours-in-eleven bills regulating the working conditions of motormen and conductors. A résumé of the later testimony and arguments was published last week.

A bill establishing a public service commission of five members, having control of railroad, street railway, telegraph and telephone lines of the State, was approved on April 16, 1913, by the House committee on ways and means, and was sent to the House for a first reading. The bill abolishes the present Railroad Commission.

### MINNESOTA

By a vote of seventy-eight to thirty the House has rejected the bill providing for state regulation of public utilities.

### NEW YORK

The Senate on April 15, 1913, defeated by a vote of twenty-two to twenty-four the bill to transfer the jurisdiction over the telephone and telegraph companies from the Public Service Commission of the Second District to the Public Service Commission of the First District.

Three bills have been drawn to give the Public Service Commissions powers similar to those exercised by the Interstate Commerce Commission in regard to rates. It is



also proposed to facilitate litigation which involves decisions made by the commissions. The bills are also designed to bring baggage and transfer companies under the jurisdiction of the public service commissions by making them common carriers.

Governor Sulzer has signed the Levy bill relating to the manipulation of the prices of securities.

OHIO

The Bigelow bill, revoking the franchises of electric railway companies made for more than twenty-five years was passed by the House on April 10, 1913. Representative Bigelow, immediately after its passage by the House, had the bill sent to the Senate, where it was referred after second reading to the committee on municipal affairs. The bill would set a precedent by revoking contracts that have been considered inviolate.

The House has passed the Volmer bill requiring that motormen and conductors shall have at least eight hours to rest after fifteen consecutive hours of employment. The Kilrain bill, requiring seats for motormen and conductors on prepayment cars, has been acted upon favorably by the House. Screens for the protection of motormen will be required if the Moore bill, which has already passed the House, becomes a law. Representative Wise, of Stark County, has secured the passage by the House of the bill to give county commissioners the right to annul indeterminate franchises of electric railways. The Plumb bill, giving the Columbus, Urbana & Western Railway right-of-way across the grounds of the girls' industrial school near Delaware, has been passed by the House.

The Mills bill, which will allow the sale of bonds in small amounts for the purchase of street railways and exempt bonds for city-owned street railways from the provisions governing the debt limit of cities, has been passed by the House.

TEXAS

The Thirty-third Legislature, which adjourned April 1, to meet again in special session July 21, considered a total of 1467 bills and resolutions. Of this number 197 general bills and resolutions finally passed both branches of the House and have been acted upon favorably by the Governor. In all 1397 bills were introduced. Of this number the Senate fathered 494 and the House 903. In the Senate twenty-four joint resolutions were offered and in the House forty-three. Bills and resolutions offered this session exceed those of the Thirty-second Legislature by 443. During the session of the last Legislature a total of 1024 bills and resolutions were presented for consideration. There were ninety-five bills passed by the Senate, all of which have either received consideration at the hands of Governor Colquitt or will soon be at his disposal, while 102 bills passed the lower branch of the House. The records show that during the session 114 bills were killed or died on the calendar, while twenty-three amendments to the constitution met the same fate. A joint resolution calling for a constitutional convention was also killed.

WISCONSIN.

The Senate has passed the Linley bill providing that municipalities may at any time purchase street railways. The present law specified that such a purchase must be made within three years of the expiration of the franchise held by the company. Much interest is being manifested in the effect of the bill which has been passed authorizing the Railroad Commission to order the joint use of tracks by street railways, interurban railways and steam railroads.

PROGRAM OF ASSOCIATION MEETING

New England Street Railway Club

The regular monthly meeting of the New England Street Railway Club will be held on April 23, 1913, at 6.30 p. m. in the new mahogany room at the New American House, Boston, Mass. During the dinner the Clio quartet will play and Miss Irene Champney, Miss Emily Wilson and Chick Fox will entertain. The speaker of the evening will be Harry P. Cassidy. Mr. Cassidy, it is announced, will depart considerably from street railway topics.

Financial and Corporate

Stock and Money Market

April 16, 1913.

There was a sharp contraction in the selling of securities on the New York Stock Exchange to-day. Nearly all the active issues showed some amount of loss, although the declines were not extensive enough to be regarded with much importance. Railway and other bonds were irregular. Rates in the money market to-day were: Call, 2½ @ 3 per cent; thirty days, 3¾ @ 4 per cent; sixty days, 4 @ 4¼ per cent; ninety days and four to six months, 4½ @ 4¾ per cent.

The Philadelphia market to-day was broad but inactive, except for a few issues. The demand for bonds continued good.

Trading in Chicago to-day was narrow and the volume of transactions very small. The bond transactions were confined to a few issues.

In the Boston market Boston Elevated Railway was again a feature. It closed at 98, up 3, with that bid and 98¾ asked. Otherwise the market was dull and somewhat irregular.

The market for stocks in Baltimore to-day was extremely narrow and dull. The demand for bonds was good.

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

	April 9	April 16
American Brake Shoe & Foundry (common) .....	93¾	92
American Brake Shoe & Foundry (preferred) .....	132½	131
American Cities Company (common) .....	38¾	40
American Cities Company (preferred) .....	70	70¾
American Light & Traction Company (common) .....	400	380
American Light & Traction Company (preferred) .....	107	105
American Railways Company .....	38½	38¾
Aurora, Elgin & Chicago Railroad (common) .....	42½	42
Aurora, Elgin & Chicago Railroad (preferred) .....	85	85¼
Boston Elevated Railway .....	105½	98
Boston Suburban Electric Companies (common) .....	7½	7½
Boston Suburban Electric Companies (preferred) .....	a66	a66
Boston & Worcester Electric Companies (common) .....	7½	a8
Boston & Worcester Electric Companies (preferred) ..	43	43
Brooklyn Rapid Transit Company .....	91¼	90¾
Capital Traction Company, Washington .....	122½	123¾
Chicago City Railways .....	*150	150
Chicago Elevated Railways (common) .....	*26	29
Chicago Elevated Railways (preferred) .....	*88	88
Chicago Railways, pteptg., ctf. 1 .....	*85	90
Chicago Railways, pteptg., ctf. 2 .....	*21½	22
Chicago Railways, pteptg., ctf. 3 .....	*6½	7
Chicago Railways, pteptg., ctf. 4 .....	*3½	3½
Cincinnati Street Railway .....	111	111
Cleveland, Southwestern & Columbus Ry. (common) ..	5½	5½
Cleveland, Southwestern & Columbus Ry. (preferred) ..	30	30
Cleveland Railway .....	104¾	103
Columbus Railway & Light Company .....	18	18
Columbus Railway (common) .....	69½	69½
Columbus Railway (preferred) .....	82½	82½
Denver & Northwestern Railway .....	*108	*108
Detroit United Railway .....	a80	80
General Electric Company .....	141	139¾
Georgia Railway & Electric Company (common) .....	118¾	118
Georgia Railway & Electric Company (preferred) .....	84½	83¼
Interborough Metropolitan Company (common) .....	17¾	17
Interborough Metropolitan Company (preferred) .....	59¾	58
International Traction Company (common) .....	*35	*35
International Traction Company (preferred) .....	95	*95
Kansas City Railway & Light Company (common) .....	*15	15
Kansas City Railway & Light Company (preferred) ..	*30	*30
Lake Shore Electric Railway (common) .....	*6½	*6½
Lake Shore Electric Railway (1st preferred) .....	*91	*91
Lake Shore Electric Railway (2d preferred) .....	*25½	*25½
Manhattan Railway .....	129	128¾
Massachusetts Electric Companies (common) .....	18	17½
Massachusetts Electric Companies (preferred) .....	77	76
Milwaukee Electric Railway & Light Co. (preferred) ..	*100	*100
Norfolk Railway & Light Company .....	*25¾	*25¾
North American Company .....	79	76
Northern Ohio Light & Traction Company (common)...	75	80
Northern Ohio Light & Traction Company (preferred)...	105	105
Philadelphia Company, Pittsburgh (common) .....	44¼	44
Philadelphia Company, Pittsburgh (preferred) .....	40	40
Philadelphia Rapid Transit Company .....	25¼	25¼
Portland Railway, Light & Power Company .....	67	*67
Public Service Corporation .....	115	115
Third Avenue Railway, New York .....	38	36
Toledo Railways & Light Company .....	12½	a12½
Twin City Rapid Transit Co., Minneapolis (common)...	105½	105
Union Traction Company of Indiana (common) .....	*4½	*4½
Union Traction Company of Indiana (1st preferred) ..	*81	*81
Union Traction Company of Indiana (2d preferred) ..	*34	*34
United Rys. & Electric Company (Baltimore) .....	27½	25
United Rys. Inv. Company (common) .....	28¼	27½
United Rys. Inv. Company (preferred) .....	51	49
Virginia Railway & Power Company (common) .....	52	52
Virginia Railway & Power Company (preferred) .....	92	93
Washington Ry. & Electric Company (common) .....	92	91½
Washington Ry. & Electric Company (preferred) .....	90¾	91½
West End Street Railway, Boston (common) .....	77	75½
West End Street Railway, Boston (preferred) .....	*96	95
Westinghouse Elec. & Mfg. Company .....	65½	65¾
Westinghouse Elec. & Mfg. Company (1st preferred) ..	116¾	116

\*Last sale. aAsked.



## ANNUAL REPORTS

## Hudson &amp; Manhattan Railroad

The president and board of directors of the Hudson & Manhattan Railroad have submitted the report of the operation of the company for the year ended Dec. 31, 1912. At the last annual meeting of the stockholders the fiscal year of the company was changed to end on Dec. 31, instead of March 31. Therefore the statement of income which follows includes the results of January, February and March, 1912, which have already been given in the preceding annual report.

Year Ended Dec. 31.	1912	1911
Gross revenue, all sources .....	\$5,334,660	\$4,639,464
Operating expenses and taxes .....	2,240,255	2,042,804
Gross income applicable to fixed charges.....	\$3,094,404	\$2,596,659
Interest on total interest-bearing bonds outstanding .....	\$2,943,196	\$2,944,552
Less interest chargeable to construction.....	64,114	640,627
Balance, being interest on capital employed in operation and chargeable against income....	\$2,879,081	\$2,303,924
Other charges .....	289,855	283,864
Total deductions from income.....	\$3,168,936	\$2,587,789
Net income .....	*\$74,532	\$8,869
Percentage of railroad operating expenses vs. railroad revenue .....	36.04	38.99
Number of revenue car miles operated.....	7,950,413	7,150,826
Total railroad revenue per car mile, cents.....	45.66	42.58
Railroad operating expenses per car mile, cents .....	16.45	16.60
Net railroad revenue per car mile, cents.....	29.21	25.98

\*Deficit.

Wilbur C. Fisk, the president of the company, says in part:

"The physical condition of your property is excellent. No effort has been spared to keep the property perfectly maintained in all departments.

"On April 14, 1912, temporary station facilities at Summit Avenue, Jersey City, were opened to the public. The completed structure was opened for public use during February, 1913. The Public Service Corporation of New Jersey has installed adequate terminal facilities adjacent to the Summit Avenue station and operates a large number of surface cars to that point, thus affording the people of that section of Jersey City convenient and frequent service to New York in connection with the Hudson tubes. The traffic at this station has doubled since it was first opened.

"During the year an additional platform was installed at the Erie station, with a stairway to the main passageway leading to the Erie Railroad's Jersey City terminal. This increased facility has greatly relieved the congestion of traffic at this point. The new platform, being on the east side, is used exclusively for northbound passengers, leaving the older platform for the use of southbound traffic.

"The block of real estate in Jersey City bounded by Henderson, Provost, Thirteenth and Fourteenth Streets, which was formerly occupied as the company's general storeyard, was sold in August at a price considerably in advance of its cost. The proceeds of this sale have been deposited with the Guaranty Trust Company, trustee of the New York & Jersey 5 per cent first mortgage.

"In May, 1912, the company took over the additions to the Hudson Terminal Buildings, and both the original buildings and the additions are fully rented at advantageous rates to a high class of tenants.

"Since the close of the fiscal year the directors of your company have approved a plan formulated by Kuhn, Loeb & Company, New York; Robert Fleming & Company, London, and Harvey Fisk & Sons, New York, for the readjustment of the debt of the company. The various security holders have already been advised of the details of the proposed plan, and their almost unanimous consent thereto has been most gratifying. It is expected that its successful consummation can be announced in the near future.

"As of March 31, 1912, there had been accumulated a reserve for the amortization of capital in the amount of \$512,794. During ten months since that date no further accruals have been made as, in the judgment of the directors of your company, the amount already reserved was sufficient for all reasonable current requirements and it was,

therefore, justifiable temporarily to discontinue further accretions to the reserve account. During the said period of ten months to Feb. 1, 1913, all expenditures for maintenance, renewals and repairs have been made out of current income and the amortization reserve has not been in any way depleted. Beginning with the accounts of February, 1913, it is proposed to inaugurate a new amortization plan, which will be sufficient to provide for the replacement of the various units of property at the ends of their estimated lives.

"The appointment of William G. McAdoo as Secretary of the Treasury of the United States necessitated his resignation as a director and president of this company. At a meeting of the board of directors on March 6 Mr. McAdoo's resignation was accepted with great regret, and Wilbur C. Fisk, formerly vice-president and general manager, was elected to the presidency of the company."

Traffic statistics for years ended Dec. 31, 1912 and 1911, follow:

	1912	1911
Average miles of road operated.....	7.91	7.4
Number of revenue car miles operated.....	7,950,413	7,150,826
Passenger revenue .....	\$3,404,519	\$2,846,945
Miscellaneous railroad revenue .....	225,541	197,810
Gross railroad operating revenue .....	\$3,630,061	\$3,044,755
Operating expenses (excluding taxes).....	1,308,104	1,187,124
Net railroad operating revenue.....	\$2,321,956	\$1,857,631
Passenger traffic:		
Number of passengers carried .....	58,079,194	56,717,809
Number of passengers carried per mile of road .....	7,342,502	7,664,568
Number of passengers per revenue car mile..	7.31	7.93
Revenues and operating expenses:		
Passenger revenue per mile of road.....	\$430,407	\$384,722
Gross railroad operating revenue per mile of road .....	458,920	411,453
Operating expenses (excluding taxes) per mile of road .....	165,373	160,422
Net railroad operating revenue per mile of road .....	293,546	251,031
Passenger revenue per revenue car mile.....	\$0.4282	\$0.3981
Gross railroad operating revenue per revenue car mile .....	0.4566	0.4258
Operating expenses (excluding taxes) per revenue car mile .....	0.1645	0.1660
Net railroad operating revenue per revenue car mile .....	0.2921	0.2598
Passenger revenue per passenger .....	\$0.0586	\$0.0502
Gross railroad operating revenue per passenger .....	0.0625	0.0537
Operating expenses (excluding taxes) per passenger .....	0.0225	0.0209
Net railroad operating revenue per passenger..	0.0400	0.0328

## Federal Light &amp; Traction Company

The consolidated statement of profit and loss of the Federal Light & Traction Company, New York, N. Y., and its controlled companies, exclusive of the Deming Ice & Electric Company, for the year ended Dec. 31, 1912, follows:

Gross earnings of controlled companies.....	\$1,722,647
Operating expenses of controlled companies (including taxes).....	1,008,035
Net earnings of controlled companies.....	\$714,612
Federal Light & Traction Company net income.....	22,446
Total net income (all companies).....	\$737,058
Total interest on outstanding bonds, notes and floating debt..	374,540
Balance after interest .....	\$362,518
Dividend on \$2,500,000 6 per cent preferred stock of Federal Light & Traction Company .....	150,000
Surplus, after interest and preferred dividend payments....	\$212,517

The earnings of the controlled companies, after the elimination of inter-company earnings and making provision for reserve funds, for the years ended Dec. 31, 1909, 1910, 1911 and 1912, follow:

	Gross Earnings	Operating Expenses and Taxes	Net Earnings
1909 .....	\$1,217,434	\$764,554	\$452,880
1910 .....	1,352,449	768,659	583,790
1911 .....	1,496,177	887,094	609,082
1912 .....	1,722,647	1,008,035	714,612

C. C. Chappelle, vice-president and general manager of the company, says in part:

"The gross earnings of the Federal Light & Traction Company's several controlled companies for the fiscal year ended Dec. 31, 1912, were \$1,722,647, a gain of 15.1 per cent over 1911, and the net earnings were \$714,612, a gain of 17.3 per cent over 1911.

"During the fiscal year ended Dec. 31, 1912, there was spent for additions, extensions, betterments and acquisitions



to the properties of your several controlled companies the sum of \$1,200,000, from which expenditure your company should receive substantial benefit in increased net earnings.

"Since the close of the fiscal year ended Dec. 31, 1912, your company has acquired the control of the Central Arkansas Railway & Light Corporation, which company, through its subsidiary companies, owns and operates the street railways, gas, water, electric lighting and power business in Hot Springs, Ark., and vicinity.

"The entire outstanding common stock of the Central Arkansas Railway & Light Corporation is owned or controlled by your company. The operations of the properties of the Central Arkansas Railway & Light Corporation were taken over by your company March 1, 1913, but the earnings from the several Hot Springs subsidiary companies accrue to your company from Jan. 1, 1913.

"The Central Arkansas Railway & Light Corporation gross earnings for 1913 should be in excess of \$500,000, and the net earnings from operation not less than \$240,000, the surplus thereof, after the fixed charges on outstanding bonds and dividends on preferred stock of said corporation, accruing to your company.

"Since the close of the fiscal year ended Dec. 31, 1912, the property of the Montrose Electric Light & Power Company, one of your controlled companies, has been sold.

"In conclusion, the communities served by your controlled companies are growing in population and general prosperity, and the year 1913 should show gratifying returns for your company."

#### Liverpool Corporation Tramways

The annual report of the Liverpool (England) Corporation Tramways for the calendar year of 1912 has just been issued. The revenue and expenditure account follows: Total revenue, £668,220; operating costs (including rental of leased lines), £425,018; gross profit, £243,202. The gross profit has been apportioned as follows: Interest, £50,096; sinking fund and repayment of loans, £59,248; reserve, renewal and depreciation account, £66,929; contribution in aid of the general rate, £66,929. The net profit for the year amounted to £133,857, an increase of £19,125 over 1911.

The number of passengers carried and miles run during 1912 and 1911 follow:

	1912	1911	Increase	Per Cent Increase
Passengers .....	134,249,967	128,625,374	5,624,593	4.4
Mileage .....	12,590,408	12,399,469	190,939	5.0

The average earnings per car mile for the year 1911 amounted to 12.03d., as against 11.64d. for 1911, an increase of 0.39d. The traffic receipts and car mile earnings, together with the passengers carried, are the highest recorded in connection with the Liverpool Tramways.

The report refers to the two new sample cars put in service last year. Both were double-deck cars and were described in the ELECTRIC RAILWAY JOURNAL for July 6, 1912. One of them, a single-truck car, has proved very satisfactory and six more have been ordered. The double-truck car has also shown its superiority over the ordinary type of double-truck cars, but double-truck cars are not considered suitable for general service in Liverpool.

During the year the wages of the drivers, conductors and other employees were raised ¼d. per hour. The rolling stock has been increased by the addition of fourteen cars. The following statement shows the division of passengers over various stages:

Value of Tickets.	Number Sold	Percentage of Total
1d.	118,342,962	88.151
2d.	14,407,459	10.732
3d.	1,207,943	0.900
4d.	167,025	0.124
5d.	2,008	0.002
6d.	122,590	0.091
	134,249,967	

The increase in the number of penny section tickets sold amounted to 39,688, valued at £165 7s. 4d., or 5.4 per cent. The company has now 587 cars. The ordinary day's service consists of 445 cars. There are 2166 employees, compared with 2295 in 1911.

The report contained a number of traffic curves, including one showing the passengers carried per hour and the licensed capacity of the cars per hour.

#### New Orleans Railway & Light Company

The income account of the New Orleans Railway & Light Company, New Orleans, La., for the year ended Dec. 31, 1912, compares with the income account of the previous year as follows:

	1912	1911
Operating revenues .....	\$6,628,147	\$6,335,462
Operating expenses .....	3,420,356	3,419,648
Net operating revenue.....	\$3,207,791	\$2,915,813
Revenue outside operations.....	10,463	14,453
Total net revenue.....	\$3,218,255	\$2,930,267
Revenue deductions:		
Taxes .....	\$560,980	\$535,339
Uncollectible consumers' accounts.....	5,010	5,190
Total revenue deductions.....	\$565,990	\$540,530
Net operating income.....	\$2,652,264	\$2,389,736
Miscellaneous income .....	14,324	12,918
Gross corporate income.....	\$2,666,588	\$2,402,654
Income deductions:		
Interest:		
On funded debt of N. O. Ry. & Lt. Co....	\$967,696	\$944,380
On funded debt of affiliated companies.....	299,372	315,414
On consumers' and employees' deposits....	10,863	10,726
On other unfunded debt.....	33,185	1,888
Rent for lease of other street railroad:		
Interest on funded debt of lessor company.	302,903	304,578
Dividends on stocks, lessor company—held by others .....	4,130	4,130
Other rental obligations.....	6,791	6,898
Amortization of funded debt, discount and expense .....	39,971	37,882
Other income deductions.....	2,680	1,998
Total income deductions.....	\$1,667,596	\$1,627,898
Net corporate income.....	\$998,992	\$774,756
Dividend deductions:		
On stocks of affiliated companies—held by others:		
Cumulative dividends on preferred stocks..	\$600	\$600
Declared on common stocks.....	3,360	2,460
Total dividend deductions.....	\$3,960	\$3,060
Surplus from operations for period.....	\$995,032	\$771,696

#### Delaware & Hudson Company

The following reference to the electric railways controlled by that company is contained in the report of L. F. Loree, president, to the stockholders of the Delaware & Hudson Company for the year ended Dec. 31, 1912:

"Increases in net operating revenues were as follows: United Traction Company, \$18,721; Hudson Valley Railway, \$11,713; Schenectady Railway, \$35,321. The net operating revenues of the Troy & New England Railway and the Plattsburgh Traction Company decreased \$2,578 and \$2,598 respectively.

"Dividends of 4 per cent for the year 1912 were declared on the capital stock of the United Traction Company, 6 per cent on that of the Schenectady Railway, 3 per cent on that of the Troy & New England Railway, and 5 per cent on that of the Plattsburgh Traction Company.

"The United Traction Company has completed the work inaugurated in 1911 of placing feeder wires underground. A high-tension transmission line from the Mechanicsville power plant to North Albany, a distance of 17¼ miles, has been constructed, affording the company direct transmission of current from the Mechanicsville power plant to its various transformer stations at Albany and Troy, N. Y. The tracks have been extended on Ten Broeck Street, Albany, N. Y., Mill Street and Pawling Avenue, Troy, N. Y., for a distance of 6054 ft., 1450 ft. and 2692 ft. respectively. During the year seventeen 16-ft. cars were lengthened to 21 ft., increasing the seating capacity from twenty-two to twenty-eight passengers, or 27.3 per cent, and three 18-ft. cars were rebuilt and lengthened to 21 ft., increasing the seating capacity from twenty-four to twenty-eight passengers, or 16.7 per cent.

"The Hudson Valley Railway has purchased three new passenger cars for use in interurban service between Albany and Warrensburg, N. Y., each with a seating capacity of fifty-two passengers, and has completed the work of paving Broad Street, Schuylerville, N. Y. The work of paving Lawrence Street, Glens Falls, N. Y., with asphaltic concrete pavement will be completed early in 1913."



**Havana Electric Railway, Light & Power Company, Havana, Cuba.**—The Havana Electric Railway, Light & Power Company has declared a semi-annual dividend of \$2.75 a share on its common stock. This is an increase of 50 cents a share over the previous disbursement. The regular semi-annual dividend of \$3 a share also has been declared on the preferred stock. Both dividends are payable on May 15. A special meeting of the stockholders of the Havana Electric Railway, Light & Power Company has been called for May 15 at Jersey City to vote on the proposed merger with the Havana Electric Railway.

**Interborough Rapid Transit Company, New York, N. Y.**—J. P. Morgan & Company have issued a call on the syndicate members for 12½ per cent of the \$170,000,000 of Interborough Rapid Transit Company new first mortgage 5 per cent bonds. This amounts to \$21,250,000. The funds will be used to pay off the \$15,000,000 notes of the Interborough Rapid Transit Company which mature on May 1, 1913, and for other corporate purposes. The \$300,000,000 mortgage of the Interborough Rapid Transit Company to the Guaranty Trust Company, New York, N. Y., has been filed for record with the register of New York County.

**Interstate Public Service Company, Indianapolis, Ind.**—The Interstate Public Service Company, the holding company of the Insull interests in Indiana, has increased its stock from \$3,000,000 to \$8,000,000 as the initial step in the plan to consolidate properties in Indiana which it controls for the purpose of handling the business more efficiently. Mr. Insull is reported to have said: "Although an increase has apparently been made in the stock, as a matter of fact the result will be a decrease in securities, for when the exchange of securities of the various interests takes place there will be a smaller amount than is shown at the present time." Chester P. Wilson, vice-president of the Interstate Public Service Company, has announced the purchase of the properties of the Central Indiana Lighting Company, which controls the Columbus Street Railway & Light Company.

**Interstate Railways, Philadelphia, Pa.**—John A. Rigg, president of the Interstate Railways, in a letter addressed recently to the holders of the preferred stock of the company, says: "The Interstate Railways was incorporated in New Jersey on Dec. 4, 1902, and issued \$2,291,050 of capital stock for money, full paid at par. It then acquired all the capital stock of the United Power & Transportation Company and paid for the same by an issue of \$10,776,600 of 4 per cent collateral bonds, agreeing to make advances to the United Power & Transportation Company and its underlying companies to provide for their fixed charges, betterments, operating expenses and taxes. The underlying companies earned their charges, and the Interstate Railways applied its capital to the betterment of these properties. Then came the depression of 1907-'08-'09, and the company defaulted in the interest on its bonds and in the advances it had agreed to make. In this extremity, other plans having failed, the system of leases was adopted and \$1,000,000 of preferred stock was authorized and issued in exchange for coupons of 1910 and 1911 or offered for subscription. The preferred stock was over-subscribed and issued, and the dividend of 6 per cent has been earned and promptly paid. Under the leases a fixed income to meet charges is assured, and the gradually increasing rentals would soon provide an income for the common stock were it not for the stipulation that the principal of the preferred stock must be paid before any dividend can be declared upon the common stock. However wise that precaution may have been at the outset, there is a present general sentiment among the preferred stockholders that the payment of a dividend earned upon the common stock would strengthen both the preferred stock and the bonds and would make a ready market for the 6 per cent preferred stock at par, so that if a holder desired to convert his stock into money he could do so more readily by a sale in the market than by waiting for gradual payments by instalments. The purpose of this communication, which, though unofficial, is issued with the approval of the board, is to get the sense of the holders of preferred stock as to the advisability of a new issue without the instalment payment clause in exchange for the present certificates, the effect of which would be to make the preferred stock permanent."

**Lehigh Valley Transit Company, Allentown, Pa.**—The directors of the Lehigh Valley Transit Company have authorized the officers of the company to enter into a contract with Edward B. Smith & Company, Philadelphia, Pa., representing the stockholders of the Easton Consolidated Electric Company, for the purchase of the holdings of the stockholders of the Easton Consolidated Electric Company who have agreed to accept the proposition of purchase, the number of shares aggregating 23,000. The shareholders who have not yet accepted the proposition will have until May 1 in which to accept. After that date the Lehigh Valley Transit Company will not be bound under the contract to purchase any of the minority shares. The terms of the purchase were published in the *ELECTRIC RAILWAY JOURNAL* of April 12, 1913, page 696. The Easton Consolidated Electric Company was chartered in New Jersey in 1899 to control the Easton Transit Company, the Easton, Palmer & Bethlehem Street Railway, the Phillipsburg Horse Car Railroad, the Edison Electric Illuminating Company of Easton, the Northampton Central Street Railway and the Easton & South Bethlehem Transit Company.

**Mexico, Santa Fé & Perry Traction Company, Mexico, Mo.**—Judge Barnett in the Circuit Court at Montgomery City, Mo., has granted an order of sale to the plaintiffs in the case of J. D. Bates against the Mexico, Santa Fé & Perry Traction Company to foreclose under the bond issue. The date of the sale and the terms remain to be fixed by the court.

**New York, Westchester & Boston Railway, New York, N. Y.**—The Public Service Commission of the Second District of New York has authorized the New York, Westchester & Boston Railway to issue its first mortgage bonds to the par value of \$6,044,000, the bonds authorized to the amount par value of \$1,290,000 to be sold at not less than par and the balance to be sold at not less than 92. The proceeds of the sale of the bonds are to be used for right-of-way, station and other construction purposes, for the construction of the main line from New Rochelle to the terminus in Port Chester, for the construction of double track from the present end of its main line at Larchmont Junction, New Rochelle, to the proposed terminus in Port Chester, to complete the construction of the White Plains branch, and to pay and cancel outstanding notes held by the New York, New Haven & Hartford Railroad for money loaned for capital purposes.

**People's Traction Company, Galesburg, Ill.**—Charles S. Harris, secretary and treasurer of the People's Traction Company, is reported to have purchased the holdings of President A. P. Higgins of the company, giving Mr. Harris control of 1282 shares of stock out of 1500 shares.

**Petaluma & Santa Rosa Railway, Petaluma, Cal.**—The Petaluma & Santa Rosa Railway has received authority from the Railroad Commission to pledge \$80,000 of its first mortgage 5 per cent bonds as collateral for a note for \$64,000. It is proposed to use the proceeds of the note to pay for the construction of 5½ miles of electric railway from the main line of the company from Liberty Station to Two Rock.

**Toledo & Chicago Interurban Railway, Kendallville, Ind.**—The property of the Toledo & Chicago Interurban Railway was sold at receiver's sale at Fort Wayne, Ind., on April 14, 1913, at the upset price of \$550,000 to George R. Sheldon, New York, N. Y., representing the holders of the bonds. On April 13, 1913, the Fort Wayne & Northwestern Railroad was incorporated in Indiana with a capital stock of \$1,950,000, consisting of \$650,000 of preferred stock and \$1,300,000 of common stock, presumably as the successor to the Toledo & Chicago Interurban Railway.

**Toledo Railways & Light Company, Toledo, Ohio.**—At the meeting of the representatives of the two factions in the Toledo Railways & Light Company reorganization held in the offices of Attorney Rathbun Fuller at Toledo on the afternoon of April 14, 1913, a temporary board of directors was chosen as follows: F. R. Coates, Rathbun Fuller, Thomas H. Tracy, John H. Taylor and R. D. Logan, Toledo; Charles A. Frueauff, F. J. Derge, Milan R. Bump, George Williams and Frank W. Frueauff, New York; Cyrus L. Coup and George L. Heater, Toledo; William F. Hoffman, Columbus, Ohio, and C. F. Chapman, Jr., George D.



Welles, Frank W. Coughlin, Harry W. Isenberg, Frank E. Miller, Robert Newbegin, Eugene H. Winkworth and Newton A. Tracy, all with the law firm of King, Tracy, Chapman & Welles, Toledo. While this board is temporary permanent members are to be elected at a meeting called for April 21. Officers were chosen as follows: Frank R. Coates, president; Rathbun Fuller, vice-president; M. R. Bump, secretary; S. D. Carr, treasurer. It is said that out of a total of 139,000 shares of stock 120,000 shares were represented at the meeting on April 14. The number of members of the board has been increased from nine to twenty-one. By order of Judge J. M. Killits of the Federal Court the officers and directors chosen by the Doherty interests took possession on April 16, 1913. The petition was filed by the Toledo Traction, Light & Power Company and alleged that the Smith faction was wrongfully in possession of the property. The injunction is temporary and is to be in effect until further orders are issued by the court.

**Dividends Declared**

East St. Louis & Suburban Company, East St. Louis, Ill., quarterly, 1¼ per cent, preferred.

Grand Rapids (Mich.) Railway, quarterly, 1¼ per cent, preferred.

Havana Electric Railway, Light & Power Company, Havana, Cuba, 3 per cent, preferred; 2¾ per cent, common.

Jacksonville (Fla.) Traction Company, quarterly, 1½ per cent, preferred; quarterly, 1¼ per cent, common.

Lehigh Valley Transit Company, Allentown, Pa., 50 cents, preferred.

Lewiston, Augusta & Waterville Street Railway, Lewiston, Me., quarterly, 1½ per cent, preferred.

Mexico (Mex.) Tramways, quarterly, 1¼ per cent.

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

Public Service Investment Company, Boston, Mass., quarterly, 1½ per cent, preferred.

United Railways & Electric Company, Baltimore, Md., \$1, common.

**ELECTRIC RAILWAY MONTHLY EARNINGS**

**CHATTANOOGA RAILWAY & LIGHT COMPANY, CHATTANOOGA, TENN.**

Period	Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus
1 m. Feb. '13	\$88,878	*\$55,505	\$32,373	\$23,740	\$9,633
1 " " '12	76,657	*45,275	30,382	21,279	9,103
12 " " '13	1,091,523	*654,994	436,529	271,621	164,908
12 " " '12	958,335	*565,857	392,478	243,836	148,642

**CLEVELAND, PAINESVILLE & EASTERN RAILROAD, WILLOUGHBY, OHIO**

1 m. Feb. '13	\$24,548	*\$15,909	\$8,638	\$10,227	†\$1,589
1 " " '12	22,819	*15,991	6,828	9,944	†3,115
2 " " '13	52,643	*32,590	20,052	20,699	†646
2 " " '12	46,729	*32,949	13,771	19,959	†6,188

**COMMONWEALTH POWER, RAILWAY & LIGHT COMPANY, SAGINAW, MICH.**

1 m. Feb. '13	\$549,665	*\$295,088	\$254,577	\$142,327	\$112,250
1 " " '12	488,859	*285,386	203,473	108,241	95,232
12 " " '13	6,532,924	*3,762,961	2,769,963	1,558,501	1,211,462
12 " " '12	5,647,600	*3,257,651	2,389,949	1,300,400	1,089,549

**CUMBERLAND COUNTY POWER & LIGHT COMPANY, PORTLAND, MAINE**

1 m. Feb. '13	\$172,587	*\$101,605	\$70,982	\$56,733	\$14,249
1 " " '12	149,711	*84,445	65,266	48,158	17,108
12 " " '13	2,151,405	*1,217,361	934,044	653,082	280,962
12 " " '12	2,014,013	*1,274,757	739,256	552,929	181,327

**DETROIT (MICH.) UNITED RAILWAY**

1 m. Feb. '13	\$920,166	*\$623,519	\$296,646	\$178,603	\$108,043
1 " " '12	790,203	*525,137	265,064	175,155	89,909
2 " " '13	1,925,512	*1,301,295	624,216	357,103	267,112
2 " " '12	1,598,015	*1,070,962	527,053	359,758	199,701

**EAST ST. LOUIS & SUBURBAN COMPANY, EAST ST. LOUIS, ILL.**

1 m. Feb. '13	\$200,100	*\$117,832	\$82,268	\$49,781	\$32,487
1 " " '12	185,809	*106,026	79,783	47,595	32,188
12 " " '13	2,488,921	*1,379,919	1,109,002	580,958	528,044
12 " " '12	2,298,587	*1,281,979	1,016,608	552,735	463,873

**GRAND RAPIDS (MICH.) RAILWAY**

1 m. Feb. '13	\$93,049	*\$56,047	\$37,002	\$14,821	\$22,181
1 " " '12	91,627	*53,999	37,628	14,727	22,901
12 " " '13	1,241,548	*706,972	534,576	175,265	359,311
12 " " '12	1,184,564	*669,214	515,350	178,682	336,668

**LAKE SHORE ELECTRIC RAILWAY, CLEVELAND, OHIO**

1 m. Feb. '13	\$88,679	*\$59,798	\$28,881	\$34,937	†\$6,055
1 " " '12	82,117	*56,392	25,724	34,833	†9,108
2 " " '13	189,052	*124,775	64,277	69,875	†5,597
2 " " '12	169,270	*111,842	57,420	69,424	†12,004

\*Includes taxes. †Deficit.

**Traffic and Transportation**

**Report of Milwaukee Benefit Association**

The first annual report of the Employees' Mutual Benefit Association of The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., and associated companies, for the year ended Feb. 28, 1913, has been issued in pamphlet form. The report, showing in detail the results and activities of the association, presents many facts of interest and importance. The total income amounted to \$25,254, as follows: Monthly dues—members, \$9,576; monthly dues—company contributions, \$9,576; company contributions for expenses, \$5,904; miscellaneous income, \$197. The total expense amounted to \$17,562, as follows: Sick benefits, \$7,819; death benefits, \$1,200; association physician's fees, \$2,317; directors' fees and expenses attending meetings, \$291; drugs, medical and surgical supplies, \$18; miscellaneous expenses, \$10; company contributions (services of officials, office expenses, stationery and printing, postage, etc.), \$5,904.

The cash on hand at the close of business on Feb. 28, 1913, was \$12,527, of which \$1,527 is on current deposit at the Wisconsin National Bank and \$11,000 is invested in time deposit certificates of the Wisconsin National Bank, drawing interest at the rate of 3 per cent per annum. Sick benefits were allowed to 363 members, covering 430 cases of disability caused by sixty-three different kinds of sicknesses. and fourteen cases of disability caused by injuries received when off duty. The amount of these sick benefits allowed to those 363 members was \$7,819. The amount paid into the association by these 363 members was \$2,181. The 363 members to whom sick benefits were paid represent thirty-three different occupations. Of the 363 members 161 were motormen, 143 were conductors and fifty-nine were engaged in thirty-one other occupations. There were four death benefits amounting to \$1,200 allowed to beneficiaries.

In furnishing medical attendance to the members the medical staff made 1764 visits to the homes of the members and prescribed 1433 treatments at their offices, making a total of both of 3197. The value of the medical services thus rendered, based on an average of \$1 per treatment, was \$3,197.

This total of 3197 includes only treatments given by four of the association's physicians—three located in Milwaukee, one in Watertown. Treatments given by the other four association physicians, located in West Allis, Waukesha, Racine and Kenosha, and treatments given by the medical director in hospitals, at the homes of members or at his office are not included. The data of the treatments given by the four association physicians previously referred to and the medical director are not available, but if added to the 3197 treatments recorded would increase the number of treatments to not less than 4000 and the value of the medical services rendered to not less than \$4,250.

The medical director performed thirty-seven surgical operations, fourteen of which were major operations, and twenty-three minor operations. The value of these surgical operations was not less than \$1,750.

The number of members admitted initially, pursuant to plan outlined in the announcement dated Jan. 1, 1912, prior to April 1, 1912, was 1654; 524 members were admitted during the period beginning April 1, 1912, and ending Feb. 28, 1913. Five hundred and forty-two members were out of the service of the companies between March 1, 1912, and Feb. 28, 1913. Fourteen members were dropped from the membership roll, nine being under age and five withdrawing their membership. Five members died. There were 1612 members in the association at the close of Feb. 28, 1913.

**Safety League in Rockford.**—S. R. Smith, claim agent of the Rockford & Interurban Railway and Rockford City Traction Company, Rockford, Ill., has taken steps to form a safety league in Rockford. Booklets and badges have been distributed among the school children of the city by the company.

**Accident in Baltimore.**—One person was killed and more than twenty were injured recently when a car of the United Railways & Electric Company, Baltimore, Md., was derailed from the bridge which connects Baltimore City with



Anne Arundel County. The car left the bridge and plunged into the Patapsco River.

**Change of Schedule of Market Street Elevated, Philadelphia.**—The work of relaying track on the Market Street elevated line of the Philadelphia (Pa.) Rapid Transit Company was commenced on the night of April 8. While this work is under way all trains, after 1 a. m., will be run on a twenty-minute headway, except on Saturday nights, when the regular ten-minute headway will be maintained.

**Increase in Wages in Jamestown.**—The Jamestown (N. Y.) Street Railway has announced an increase in wages and an improvement in the working hours of its men to take effect on May 1, 1913. The new schedule of wages is a sliding one. It gives first-year men 19 cents an hour and increases until at the end of the tenth year the men receive 25 cents an hour, a rate of increase of about 1½ cents an hour.

**Rhode Island Company Agrees to Reinstate Men.**—As a result of a conference held recently between A. E. Potter, general manager of the Rhode Island Company, Providence, R. I., and a committee of the employees Mr. Potter has agreed to reinstate all of the men discharged some time ago except two. Action has been deferred, however, on the question of paying the men during the time that they were idle. Mr. Potter promised to let the men know his decision in regard to this matter within a few days.

**Extension of Accident Prevention Campaign by A., E. & C. Railroad.**—The accident prevention campaign begun in the schools of Aurora, Ill., by H. B. Adams, of the Aurora, Elgin & Chicago Railroad, will be extended by request to the schools of Elgin. Mr. Adams has addressed more than 6000 pupils in public, parochial and business schools. In the first three weeks of the campaign there was not an accident in Aurora. The city of Aurora will ask the Aurora, Elgin & Chicago Railroad to hang signs from guy wires so that drivers of vehicles may know they are approaching a street upon which there is a car track.

**Trolley Trip from Michigan to St. Louis.**—Officials of the Michigan United Traction Company, Lansing, Mich., planned to take a trip on the private car "Michigan" to Indianapolis via Detroit, Toledo, Lima, Fort Wayne, Bluffton and Anderson. They expected to leave on April 16. At Indianapolis they intended to take the Big Four Railroad to Peoria and then, through the courtesy of the Illinois Traction System, leave on a private car on April 18 for St. Louis. The fact that the through trip may be made by electric car from Michigan to Indianapolis indicates that the conditions caused by the floods are becoming a matter of the past.

**Lectures to Employees on Technical Subjects.**—Technical features of interest to car crews and others are being embodied in the educational work of the employees of the Louisville & Northern Railway & Lighting Company, New Albany, Ind., who meet regularly in the general offices of the company at what are called "boosters' meetings." William Buckman, of the electrical staff of the company, is on the program of the club for a series of lectures upon the wiring and electrical equipment of cars. His talks are illustrated with blue-prints drawn to a large scale and illustrating the points touched upon, while the audiences are composed largely of car men and road employees.

**General Statement of Policy by California Commission in Regard to Rates.**—In a decision handed down by the Railroad Commission of California on April 8, 1913, in passing upon the application of the owners of a water company in San Diego County to increase rates the commission summarized its position in this regard as follows: "All contracts made by a public utility will not stand when this commission has fixed rates, but this commission may adopt the rates fixed by contract if made under fair conditions, as far as it may do so without bringing about discrimination, and it specifically instructs utilities that they are not to repudiate their contracts until the matter has been presented to this commission."

**Fare Complaint Dismissed in New Jersey.**—The Board of Utility Commissioners of New Jersey has dismissed the complaint under which an order was sought to compel the Public Service Railway to grant a 5-cent fare from any point in Newark to any point in Union Township, Bergen County, or vice versa. The present fare between Newark

and points in Union Township, Rutherford and East Rutherford is 10 cents. The board made an order last October dismissing a similar complaint by the Mayor of Arlington, the order establishing a fare zone at Belleville Turnpike on the line between Newark and Hackensack. Union Township lies outside of this fare zone, and as conditions have not changed materially since the decision of October, the board dismissed the new petition for the reasons stated in its earlier decision.

**Accident Prevention Campaign in York.**—The York (Pa.) Railways is inaugurating an educational campaign for the prevention of accidents on the public highways of the city and has enlisted the co-operation of the officials of the public schools of York. Five thousand blotters are being distributed among the pupils in all the graded schools in the city and the teachers are instructing the children to exercise care in walking or playing upon the streets. The blotters describe the danger to youths playing in or along the car tracks, stealing rides on street cars, riding on steps of cars, putting their heads out of car windows, and getting off the cars before they are brought to a stop. The children are being urged to take the blotters home. The teachers in emphasizing the dangers of the streets are teaching the children a series of don'ts at the request of the company.

**Apprehending Pickpockets on New York Railways.**—In the item published in the *ELECTRIC RAILWAY JOURNAL* of April 12, 1913, page 698, referring to the apprehension and conviction of criminals by secret service men in the employ of the Interborough Rapid Transit Company, the total number of arrests of pickpockets between July 1, 1911, and March 17, 1912, was thirty-four, as stated in the previous item, but the number sentenced to prison was twenty-six instead of thirty-six. The Grand Jury failed to indict in four cases and four were acquitted. As stated previously, the number of pickpockets arrested on property of the company by the company's detectives from March, 1912, up to and including April 4, 1913, was twenty-three. Seventeen convictions have resulted from the last-mentioned arrests, there have been three discharges and three persons are under bail awaiting proceedings.

**Fare Adjustment on Long Island Railroad.**—The Public Service Commission for the First District, on the opinion of Commissioner George V. S. Williams, has dismissed the proceeding against the Long Island Railroad for alleged discrimination in charging 10 cents on express trains and 5 cents on local trains for passenger transportation between Flatbush Avenue and East New York. Before dismissing it, however, the commission induced the company to agree to a reduction of fare on the express trains to 5 cents provided patrons would purchase twenty tickets at a time for \$1. These tickets will soon be placed on sale and will be honored on express trains. The commission believes this change will obviate the principal cause of complaint, which was that the local trains at a 5-cent fare were badly crowded during the rush hours while express trains, upon which the 10-cent rate was charged, frequently operated with vacant seats. It is expected that the new arrangement will tend to equalize the traffic and reduce crowding.

**Service Recommendations for Cambridge.**—The Massachusetts Railroad Commission has issued a number of recommendations bearing upon the service of the Boston (Mass.) Elevated Railway on its surface lines in Cambridge, including the establishment of transfer facilities in the Inman Square district, the operation of additional cars, the shortening of certain routes and the establishment of express service in the morning rush hours inbound and in the evening rush hours outbound between Harvard Square and North Cambridge. Increased service over the crosstown line between Harvard Square and Dudley Street, in the Roxbury district of Boston, is to be provided during certain hours. Additional rush-hour service is recommended in the Huron Avenue district at morning and night and a trial shuttle service on a five-minute headway is to be undertaken between Harvard and Central Squares at certain periods when the local traffic on the surface immediately above the Cambridge subway line is heavy. It is recommended that the inbound express service shall be carried on without stopping to take on passengers going toward the business district in the morning rush hours inside the terminal limits of the express zone, with reversed conditions in the evening.



## Personal Mention

**Mr. L. B. Wickersham** has been appointed chief electrical engineer of the Oregon Electric Railway and the United Railways, with headquarters at Portland, Ore.

**Mr. A. M. Lupfer** has been appointed chief engineer of the Oregon Electric Railway and the United Railways, with headquarters at Portland, Ore., vice Mr. L. B. Wickersham, assigned to other duties.

**Mr. R. H. Crozier** has been appointed assistant general passenger agent of the Spokane, Portland & Seattle Railway, Oregon Electric Railway, Oregon Trunk Railway and United Railways, with headquarters at Portland, Ore.

**Mr. H. F. Johnson**, who has been assistant engineer of maintenance of way of the New York State Railways, Rochester Lines, has been appointed engineer of maintenance of way of the Utica & Mohawk Valley Railway, Utica, N. Y., to succeed Mr. M. J. French, resigned.

**Mr. P. J. Wood**, formerly master mechanic of the Cleveland, Painesville & Eastern Railroad, Willoughby, Ohio, has accepted the position of general master mechanic of the Northern Ohio Traction & Light Company, with headquarters at Akron, Ohio. He will have supervision over the rolling stock of the Canton and Akron divisions.

**Mr. S. W. Greenland** has been appointed general manager of the Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind., a place made vacant some time ago when Mr. Robert W. Watson severed his connections with the company. Mr. Greenland, while virtually general manager, has had the title of assistant general manager. In addition to being general manager, Mr. Greenland has charge of the purchasing department.

**Mr. E. C. Deal**, who has been general manager of the Augusta-Aiken Railway & Electric Corporation, Augusta, Ga., since April 1, 1911, has been elected a vice-president of the company. Mr. Deal is a native of Atlanta and gained his early experience with the Georgia Electric Light Company, now the Georgia Railway & Power Company. He was connected with properties in Baltimore, Seattle, Brockton and Terre Haute controlled by Stone & Webster, and was also chief engineer of the Gas & Electric Company of Bergen County, in New Jersey. Previous to becoming connected with the Augusta-Aiken Railway & Electric Corporation Mr. Deal was manager of the North Carolina Public Service Company, Greensboro, N. C.

**Mr. Rex Dunbar Frazier**, formerly editor of the *Tangent Magazine*, which is published at Houston, in the interest of the Stone & Webster companies, has been appointed assistant general passenger agent of the Galveston-Houston Electric Railway. Before he became connected with the *Tangent Magazine* some eighteen months ago Mr. Frazier was connected with the editorial staff of the *Houston Post* for more than two years. Previous to that he was engaged in newspaper work in Peoria, Ill. Mr. Frazier has been a frequent contributor to the newspapers and magazines and is the author of a fourteen-page article, "The United States Army in Texas," profusely illustrated, which is published in the issue of the Stone & Webster *Public Service Journal* for April, 1913.

**Mr. Charles A. Brooks** has been appointed local manager of the Poughkeepsie City & Wappingers Falls Electric Railway, Poughkeepsie, N. Y., the management of which has been taken over by the J. G. White Management Corporation, New York, N. Y. Mr. Brooks has been engaged in electric railway work about ten years. He had two years of practical shop work, both mechanical and electrical, and then acted for a year as assistant superintendent of equipment of an electric railway in Ohio. For two years he was chief clerk to the superintendent of equipment of the Third Avenue Railway, New York. He was also assistant general manager of the South Shore Traction Company, New York. In September, 1910, he entered the supply business but later joined the railway forces of J. G. White & Company.

**Mr. George F. Faber** has been appointed general superintendent of the Atlantic City & Shore Railroad, Atlantic City, N. J., to succeed Mr. J. N. Akarman, who, as noted elsewhere in this column, has resigned from the company on account of ill health. Mr. Faber began his railroad career with the Pennsylvania Railroad as a clerk in the superin-

tendent's office, where he served from 1890 to 1892. He next became connected with the accounting department of the East Cleveland Railroad. From 1894 to 1901 he was associated with the Warner & Swasey Company, Cleveland, Ohio, but resigned from this company to re-enter the electric railway field with the so-called Appleyard lines in Ohio. Mr. Faber next accepted the position of superintendent of the Elgin-Belvidere Electric Railway, then under construction. He subsequently became general superintendent of the Western Ohio Railway, Lima, Ohio. Early in 1909 he accepted the position of traffic manager of the Chicago, Lake Shore & South Bend Railway, and in August, 1910, was appointed superintendent of transportation of the Michigan United Railway, now the Michigan United Traction Company.

**Mr. Mansfield J. French** has resigned as engineer of maintenance of way of the New York State Railways, Utica Lines and Oneida Line, to engage in railway and structural engineering with headquarters at Syracuse. Mr. French first engaged in engineering work under Mr. C. Loomis Allen, who was then engineer in charge of reconstruction of the lines that were consolidated to form the Syracuse Rapid Transit Railway System. On Jan. 1, 1900, Mr. French became engineer of maintenance of way of the company. In September, 1901, he began work with the Oneida Railway and was in charge of surveys and track and overhead construction until July, 1903. After nine months as assistant to Mr. Charles H. Clark, engineer of maintenance of way of the Cleveland (Ohio) Electric Railway, Mr. French in 1904 became roadmaster of the Syracuse Rapid Transit Railway. In 1905 he was appointed engineer of maintenance of way of the Utica & Mohawk Valley Railway and in addition was appointed in 1907 to the same position with the Oneida Railway, retaining these positions under the consolidation of the properties as the New York State Railways, Utica Lines and Oneida Line.

**Mr. J. M. Joel** on April 2, 1913, was appointed by the executive committee of the New York State Railways as auditor of all lines controlled by that company with offices in Utica, N. Y., ranking next in position to the general auditor. Mr. Joel entered the service of the Syracuse (N. Y.) Consolidated Street Railway on Nov. 20, 1890, as clerk and after serving successively as voucher clerk, bookkeeper, and chief clerk was, in the latter part of 1903, made auditor of the Syracuse Rapid Transit Railway, which succeeded the Syracuse Consolidated Street Railway. In January, 1907, he was appointed auditor of the Syracuse Rapid Transit Railway, the Utica & Mohawk Valley Railway and the



J. M. Joel

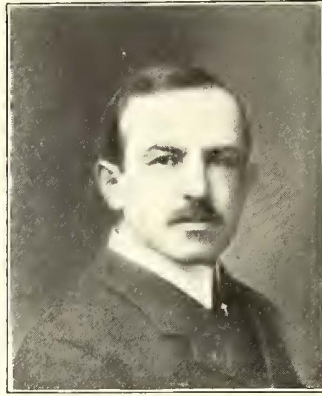
Oneida Railway, shortly after the acquisition of these properties by the Vanderbilt-Andrews interests. Mr. Joel is a member of the American Electric Railway Accountants' Association and is on the joint committee on engineering accounting of that association and the American Electric Railway Engineering Association.

**Mr. J. N. Akarman** has resigned as general superintendent of the Atlantic City & Shore Railroad, Atlantic City, N. J., on account of ill health. Mr. Akarman was born in Brooklyn on March 4, 1854, and began his railroad career in 1873 with the South Boston Railroad. In 1877 he became connected with the Middlesex Railroad. Subsequently he became superintendent of the Charles River Street Railway, Boston. Four years later, when this company was consolidated with the Cambridge Railroad, Mr. Akarman was appointed general superintendent of the Worcester (Mass.) Consolidated Street Railway. Later he negotiated the sale of the electric railways in Newark and Elizabeth, N. J., and in Worcester. He then became connected with the Elizabeth, Plainfield & Central Jersey Railway, and when the property of that company was sold to the Public Service Corporation he entered the employ of the latter, acting in



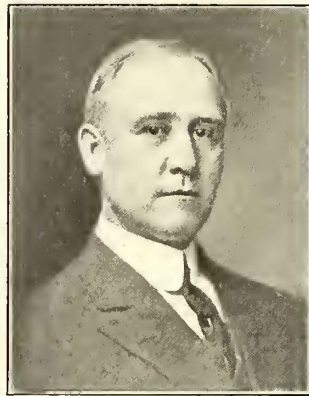
as traffic superintendent, general passenger agent and general superintendent of the South Jersey division. Mr. Akarman was appointed general superintendent of the Atlantic City & Shore Railroad four years ago to succeed the late S. S. Neff.

**Mr. David Daly**, whose appointment as manager of the Galveston-Houston Electric Railway, Galveston, Tex., in addition to being manager of the Houston Electric Company, was noted briefly in the *ELECTRIC RAILWAY JOURNAL* of April 12, 1913, was born in Boston, Mass., on Oct. 16, 1878. He was educated in the public schools of that city and afterward entered Harvard. When he was twenty-two years old he entered the employ of the Stone & Webster Engineering Corporation. After serving with the company in Boston in various capacities he was sent by Stone & Webster to Ponce, P. R., as local manager there of the Ponce Railway & Light Company. Mr. Daly returned to the United States in May, 1905, and in August of that year he was appointed by Stone & Webster to manage the Houston Electric Company. Mr. Daly succeeds with the Galveston-Houston Electric Railway Mr. L. C. Bradley, who, as previously announced in the *ELECTRIC RAILWAY JOURNAL*, has assumed the duties of assistant district manager for Stone & Webster in Texas.



D. Daly

**Mr. Frederic W. Hild**, who was elected president of the Pacific Coast Electric Railway Association, which was organized at San Francisco, Cal., on April 1, 1913, has been general manager of the Portland Railway, Light & Power Company, Portland, Ore., since March 15, 1911. This company operates 286 miles of electric railway and does a general lighting and power business. Mr. Hild is in charge of the railway, light and power operating departments of the company. He was formerly assistant general manager and chief engineer of the Havana (Cuba) Electric Railway. He was graduated as an electrical and civil engineer from Union College at Schenectady, N. Y., in the class of 1898, and was for a time connected with the General Electric Company. While in the employ of this company Mr. Hild assisted in the important rehabilitation work carried out by the Twin City Rapid Transit Company, the Kansas City Railway & Light Company and the Chicago Edison Company. Mr. Hild was one of the originators of the idea of organizing an association to represent the electric railways on the Pacific Coast, and the call for the meeting at San Francisco at which the association was organized was issued over his signature.



F. W. Hild

**Mr. Harlow C. Clark** has just been appointed by the American Electric Railway Association editor of *Aera* and will conduct a publicity campaign through that paper and in other ways with the co-operation of the individual and company members of the association. He will enter upon his task with some unusual qualifications. He is not only a trained newspaper writer, but has served as an executive officer of a municipality and of a large commercial organization, so that he brings to the consideration of the problems with which he will deal a viewpoint which must be of value in determining the kind of publicity needed to correct existing misunderstandings. After serving in various capaci-

ties in the employ of the New York Central & Hudson River Railroad, Mr. Clark began his newspaper career in Syracuse, N. Y. He was political reporter, city and Sunday editor of the *Syracuse Herald* and left the newspaper business to become secretary to Mayor Alan C. Fobes in 1903. Two years later he became secretary of the Syracuse Chamber of Commerce, an organization of more than 1200 members. During his incumbency many important civic movements were inaugurated. In 1907 Mayor Fobes made him Commissioner of Public Safety, in which office he had charge of the police, fire, health, building and lighting bureaus of the city. At the expiration of his term he returned to the Chamber of Commerce as secretary. For the last year he has been one of the editors of the *Syracuse Journal*. Mr. Clark has written much on civic and corporation matters and has been during the greater part of his life in active touch with affairs of this character.

**Mr. D. L. Turner** has been promoted to be deputy engineer of subway construction for the Public Service Commission for the First District of New York. Mr. Turner was graduated from the Rensselaer Polytechnic Institute at Troy in 1891, with the degree of civil engineer. After teaching at the institute for a year he engaged in railroad location and construction work and in architectural engineering. From 1893 to 1901 he was instructor in surveying, railroading and hydraulics in the faculty of Harvard University, having charge of these departments and conducting courses in topographical, railroad, hydraulic, water-power, canal, river and irrigation engineering. He also inaugurated the Harvard engineering summer camp and established and conducted the present camp located at Squam Lake, N. H. During this same period he engaged in general engineering and consulting practice. From 1901 to 1907 he was attached to the engineering staff of the Rapid Transit Commission of New York City, first as assistant engineer and finally as a division engineer on the executive staff of the chief engineer. From 1907 to date he has been attached to the engineering staff of the Public Service Commission for the First District as chief of the bureau of transit inspection and as engineer of the seventh division. In the former position he originated and formulated the methods of supervising the operations of the various street railways coming under the commission's jurisdiction. In the latter position he was to have direct charge of subway construction work aggregating about \$30,000,000 in value. He has, therefore, been connected with the present transit development of the city almost from its inception and has had to do with the problem in all of its phases, both from the construction and the transportation standpoints. Mr. Turner is a member of the American Society of Civil Engineers, the Boston Society of Civil Engineers and the Municipal Engineers of New York City.

#### OBITUARY

**I. Parker Lawton**, secretary of the Safety Car Heating & Lighting Company, New York, N. Y., is dead. Mr. Lawton was born in Rome, N. Y., forty-five years ago.

**Albert E. Holmes**, superintendent of the Fall River division of the Bay State Street Railway, Boston, Mass., is dead. Mr. Holmes was a native of Taunton, Mass., and was about fifty-one years of age. He attended the public schools in Taunton and Fall River and secured a position as conductor on what was the Globe Street Railway, Fall River. In June, 1901, he was appointed superintendent of the Fall River lines of the Bay State Street Railway to succeed Mr. William S. Tucker, resigned.

**Joseph T. Orme**, president of the Georgia Railway & Electric Company, Atlanta, Ga., and a director of that company, the property of which is leased to the Georgia Railway & Power Company, is dead. Mr. Orme succeeded Mr. P. S. Arkwright as president of the Georgia Railway & Electric Company when Mr. Arkwright was elected president of the Georgia Railway & Power Company. Mr. Orme was born in Atlanta in 1861 and was vice-president of the Lowry National Bank, Atlanta, with which he had been connected for more than thirty years. In addition he was treasurer of the Chamber of Commerce at Atlanta and a director of a number of other enterprises, among them the American Cast Iron Pipe Company, Birmingham, Ala., and the Georgia & Florida Railroad.



## Construction News

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

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

### RECENT INCORPORATIONS

**Pine Bluff & Sulphur Springs Interurban Railway, Pine Bluff, Ark.**—Incorporated in Arkansas to build an 8-mile electric railway between Pine Bluff and Sulphur Springs. Capital stock, \$100,000. Officers: A. G. Russell, president; H. Hanf, vice-president and treasurer, and John H. Tucker, Jr., secretary. [E. R. J., Nov. 2, '12.]

**\*Fort Wayne & Northwestern Railroad, Fort Wayne, Ind.**—Incorporated in Indiana presumably as the successor to the Toledo & Chicago Interurban Railway. The line will extend through Fort Wayne, Garrett, Auburn, Waterloo, Avilla and Kendallville, and from Waterloo eastward through Butler to the Ohio State line, and westward from Kendallville through Brimfield, Wawaka, Logonier, Millersburg and Goshen. Capital stock, \$1,950,000; preferred stock, \$650,000; common stock, \$1,300,000.

**St. Paul Southern Electric Railway, St. Paul, Minn.**—This company, which is constructing an electric railway between St. Paul and Hastings, Minn., has been incorporated in Delaware. Grading has been completed and the bridges are being built. Capital stock, \$5,000,000. Philip Heinz, Rochester, president. [E. R. J., Oct. 12, '13.]

**\*Norman Interurban Railway, Oklahoma City, Okla.**—Incorporated in Oklahoma with a capital stock of \$150,000. Incorporators: George W. Knox, general manager Oklahoma Railway; Guy B. Treat, J. J. Johnson, W. J. House and Charles Hoopes, Oklahoma City.

**\*Bryan & Central Texas Interurban Railroad, Bryan, Tex.**—Application for a charter will be made by this company to take over the Bryan-College Interurban Railway and build extensions to the Brazos section and other points. Capital stock, \$85,000. Officers: W. E. Saunders, president; A. W. Wilkerson, first vice-president; O. E. Gammill, second vice-president and general manager; L. L. McInnis, treasurer; L. M. Hewitt, secretary and traffic manager; Doremus Butler & Henderson, general attorneys.

**\*Willapa Bay & Eastern Railway, Seattle, Wash.**—Application for a charter has been made by this company to build an interurban line from Lincoln Creek station just south of Rochester to a point near South Bend, from where it is proposed to build along the North River. Capital stock, \$2,000,000. Incorporators: W. H. Bogle, F. T. Merritt and C. P. Bissitt.

### FRANCHISES

**Pine Bluff, Ark.**—The Pine Bluff & Sulphur Spring Interurban Railway, Pine Bluff, the incorporation of which is noted elsewhere in this issue, has asked the Council for a fifty-year franchise in Pine Bluff. This 8-mile line will connect Pine Bluff and Sulphur Springs. [E. R. J., Nov. 2, '12.]

**Texarkana, Ark.**—Rollin W. Rodgers and associates have received a franchise from the Council in Texarkana. This is part of a plan to build an electric railway between Texarkana and Clarksville. [E. R. J., Aug. 31, '13.]

**Glendale, Cal.**—The Pacific Electric Railway has asked the Council for a fifty-year franchise over several streets in Glendale. The company has received a fifty-year franchise in Orange County.

**Pittsburg, Cal.**—The Oakland, Antioch & Eastern Railway has asked the Council for a franchise in Pittsburg.

**Redding, Cal.**—Albert C. Agnew, Redding, has received franchises to build an electric railway and power line in Redding and on the highways of Shasta County. [E. R. J., March 15, '13.]

**Sacramento, Cal.**—The Northern Electric Company will ask the Council for a franchise for a change of its route within Sacramento.

**Sacramento, Cal.**—The Pacific Gas & Electric Company will ask the Council for a transfer of its franchise granted for a line on Twelfth Street to Fifteenth Street in Sacramento.

**Canon City, Col.**—Frederick B. Smith, New York, N. Y., has received from the City Council an extension of time to May 1 in which to begin the construction of an electric railway from Canon City to the top of Royal Gorge. [E. R. J., Jan. 11, '13.]

**Denver, Col.**—The Denver City Tramway has received a franchise from the Council and County Commissioners to extend its lines in the city of Denver and Denver County.

**Ansonia, Conn.**—The Connecticut Company has received a franchise from the Council to double-track its east side lines in Ansonia.

**Champaign, Ill.**—The Urbana & Champaign Railway, Gas & Electric Company, a subsidiary company of the Illinois Traction Company, has received a twenty-nine-year franchise from the Council to build a line about its proposed new station at University Avenue and Market Street in Champaign.

**Collinsville, Ill.**—The Springfield & Central Illinois Traction Company has received a franchise from the Council in Collinsville. This line will connect St. Louis, Terre Haute, Springfield and Duquoin. Isaac Smith, 1042 Pierce Building, St. Louis, president. [E. R. J., March 29, '13.]

**Dubuque, Ia.**—The Union Electric Company has received a twenty-five-year franchise from the Council to extend its lines in Dubuque.

**Oskaloosa, Ia.**—The City Council has granted a twenty-five-year franchise to the Oskaloosa Light & Traction Company, which was recently purchased by the Illinois Traction Company. The franchise will have to be ratified by the voters of the city.

**Iola, Kan.**—The Union Traction Company has asked the Council for a new franchise in Iola.

**Abbeville, La.**—The Louisiana Traction & Power Company, Lafayette, has received a franchise in Abbeville. This line will connect Lafayette, Morgan City, Alexandria and Abbeville. J. A. Landry, Lake Charles, president. [E. R. J., Feb. 8, '13.]

**Slidell, La.**—The Interurban Railways Company has received a franchise from the Council in Slidell. This company will soon ask for a charter to build a gasoline railway to connect New Orleans, Slidell, Oaklawn, Liberty and Covington. Among those interested are Joseph Blythe, N. J. Clesi and T. Semmes Ranlett. [E. R. J., March 29, '13.]

**Baltimore, Md.**—The United Railways & Electric Company, Baltimore, has asked the Council for a franchise to extend its Monument Street line to Orangeville.

**East Gardner, Mass.**—The Massachusetts Northern Railways, Greenfield, has received a franchise from the Council in East Gardner.

**Highland Park, Mich.**—The Detroit United Railway has asked the Council for a franchise on Manchester Avenue to the terminus of the Hamilton line, a line from Victor and Oakland Street to Manchester Avenue and a double track on John Street in Highland Park.

**East Syracuse, N. Y.**—The East Side Traction Company has asked the Council for a franchise to double-track part of the East Syracuse line in upper James Street, East Syracuse.

**Toronto, Ont.**—The Toronto & York Radial Railway has received permission from the Railroad Commission to double-track its line on Yonge Street from the Canadian Pacific Railway tracks to the city limits and the right to connect up the Scarboro, Mimico and Metropolitan divisions subject to the municipal franchise act.

**Nashville, Tenn.**—The Nashville Traction Company, backed by W. O. Palmer and other capitalists of Detroit, Mich., has secured the consent of the Council of Nashville to reconsider its application for a franchise to operate an electric railway in Nashville. The application was originally refused, but subsequent action makes it possible that the franchise will be awarded this month. The Nashville Traction Company seeks the privilege to compete with the Nashville Railway & Light Company. [E. R. J., Jan. 11, '13.]

**Dallas, Tex.**—E. P. Turner, Dallas, and associates have asked for a franchise through Cooke County. This proposed 100-mile electric railway will extend from Glen Rose,



Somerville County, to Gainesville, Cooke County, and will traverse Johnson, Tarrant, Dallas and Denton Counties. The line will extend north from Dallas as the center to Letot, Farmers' Branch, Carrollton, Trinity Mills, Lewisville, Denton, Sanger and Gainesville. South from Dallas the proposed line will connect Eagle Ford, Grand Prairie, Mansfield, Lillian, Keene, Cleburne and Glen Rose. From Eagle Ford a spur is planned to Irving.

**Houston, Tex.**—The Houston Electric Company has asked the Council for a franchise from the Fifth Ward to the Houston Harbor addition in Houston.

\***Vancouver, Wash.**—I. S. Putnam, Vancouver, has asked the Council for a fifty-year franchise to build an electric line over certain streets in Vancouver.

#### TRACK AND ROADWAY

**Medicine Hat (Alta.) Railway.**—This company has awarded the contract to build its electric railway in Medicine Hat and work will be begun as soon as this agreement can be ratified by the ratepayers. Max Aitken, Medicine Hat, is interested. [E. R. J., Feb. 10, '13.]

**San Joaquin Light & Power Company, Fresno, Cal.**—This company plans to spend over \$1,000,000 in improvements during the year. It is now connecting up the sub-station at Strathmore with the main plant above Springville.

**Los Angeles (Cal.) Railway.**—Arrangements have been completed for the construction of this company's extension of the Fifty-fourth Street line in Los Angeles. Material has been ordered. Work has been begun by the company on the extension of the Dalton-Vernon Avenue line to the western city limits of Los Angeles.

**Pacific Electric Railway, Los Angeles, Cal.**—This company plans to spend about \$70,000 repairing its lines in Long Beach. It has decided to use Trilby rails in relaying the tracks on Pine Avenue from Ocean Avenue to Sixth Street. The company has placed in operation its new line to San Fernando.

**Oakland, Antioch & Eastern Railway, Oakland, Cal.**—This company, through its subsidiary corporation, the San Ramon Valley Railway, has awarded the contract for the building of the electric line from Walnut Creek to Danville, 7 miles, to Palmer, McBride & Quayle.

**San José (Cal.) Railways.**—Within the next few months this company plans to begin the construction of its Empire Street line in San José.

**Big Four Electric Railway, Tulare, Cal.**—This company has received permission from the State Railroad Commission to issue capital stock to the amount of \$400,000. The proceeds from the sale of the stock are to be used for the construction of the line between Tulare, Porterville and Visalia. [E. R. J., April 12, '13.]

**St. Petersburg, Fla.**—Surveys are being made from St. Petersburg to Indian Rocks by W. W. Barton, Tarpon Springs. This line is being promoted by Thomas E. Lucas, St. Petersburg; M. Joel McMullen, Largo, and S. R. Morey, St. Petersburg.

**Waycross Street & Suburban Railway, Waycross, Ga.**—Following the completion of this company's line through Gilchrist Park, for which extension material is now being placed, the line will be carried to Hebardville.

**Chicago (Ill.) City Railway.**—About 8 miles of city track will be built by this company during the year.

**Hillsboro Electric Light & Power Company, Hillsboro, Ill.**—Surveys are being made by this company for a line between Hillsboro and Nokomis.

**Chicago, Peoria & Quincy Traction Company, Peoria, Ill.**—The stockholders of this company will meet at Quincy on June 20 to vote upon an increase of the capital stock of the company from \$200,000 to \$300,000 and to discuss the question of borrowing \$3,000,000 for the completion of the railway. W. E. Elliott, Quincy, general manager. [E. R. J., Feb. 22, '13.]

**Springfield (Ill.) Consolidated Railway.**—Residents on South Spring Street have filed a petition with the City Commission asking that this company be asked to extend its South Spring Street line from Cedar Street to Ash Street in Springfield.

**Union Traction Company of Indiana, Anderson, Ind.**—Extensive improvements will be made by this company on its Third Street line in Anderson.

**Indianapolis, Columbus & Southern Traction Company, Columbus, Ind.**—Plans are being made by this company to build a new bridge to replace the present bayou bridge at Edinburg.

**Fort Wayne & Northern Indiana Traction Company, Fort Wayne, Ind.**—Work will soon be begun by this company improving its lines in Fort Wayne. New rails will be laid on Main Street.

**Cedar Rapids & Iowa City Railway, Cedar Rapids, Ia.**—This company plans to build a 15-mile line from Cedar Rapids to Mount Vernon during the year.

**Ottumwa Railway & Light Company, Ottumwa, Ia.**—About 1 mile of track will be built by this company during 1913.

**Interstate Railroad & Traction Company, Arkansas City, Kan.**—Plans are being made by this company to build soon its line south from Arkansas City to Blackwell, Chilocco, Newkirk, Ponca City and other towns in Kay County, and eventually south through Red Rock, Perry, Orlando and Mulhall to Guthrie, Okla. Headquarters, Arkansas City, Kan. O. L. Brown, Arkansas City, is interested. [E. R. J., March 22, '13.]

**Union Traction Company, Independence, Kan.**—Announcement has been made by this company that construction will be begun on its line between Chanute and Iola. This railway will ultimately be extended south to connect with the Cherryvale-Independence-Coffeyville-Parsons line and then north to Kansas City.

**Fort Scott & Pittsburg Railway, Pittsburg, Kan.**—Preliminary surveys have been made by this company on its line between Fort Scott and Pittsburg. Later this line will be extended to Olathe to connect with the Strang line which runs into Kansas City. [E. R. J., Nov. 23, '12.]

**Arkansas Valley Interurban Railway, Wichita, Kan.**—During 1913 this company will build a 24-mile line to connect Halstead and Hutchinson and a 2-mile line between Newton and College.

**Louisville (Ky.) Railway.**—It is expected that the Audubon Park extension of this railway will be in operation May 1. A spur line 3000 ft. long is to be constructed from the Okolona interurban line of the company at Audubon station to Audubon Park.

**New Orleans Railway & Light Company, New Orleans, La.**—Plans are being considered by this company to extend its Clio Street line in New Orleans up Claiborne Avenue from Napoleon Avenue to the boundary of the parish.

**Southwestern Traction & Power Company, New Orleans, La.**—During the year this company will build a 175-mile line between Abbeville, Erath, Delcambrie, St. Martinville, Breaux Bridge, Lafayette, Broussard, Cades, Adeline, Cherenton, Baldwin, Franklin, Garden City, Patterson, Centerville, Berwick and Morgan City, La.

\***North Beach Railway, Baltimore, Md.**—This company has asked the Public Service Commission for the approval of the issue of \$10,000 of 5 per cent twenty-year bonds and the sale of \$50,000 of stock. This is part of a plan to build a 2½-mile electric railway in Calvert and lower Anne Arundel Counties. Among those interested are John C. Shaw and V. W. Hughes.

**Hagerstown & Clear Spring Railway, Hagerstown, Md.**—The project to build the 12-mile line between Clear Spring and Hagerstown has been revived. About two years ago a company was formed to construct this railway, but the enterprise failed. John R. Bear, Philadelphia, and L. O. Davis, Harrisburg, are now interested in the project. [E. R. J., May 18, '12.]

**Fitchburg & Leominster Street Railway, Fitchburg, Mass.**—This company has been asked to consider plans to extend its Franklin Street line for about 1 mile along Franklin Road in West Fitchburg.

**Miller's River Street Railway, Miller's Falls, Mass.**—Work will be begun in the spring by this company on its line between Orange and Miller's Falls. D. P. Abercrombie is interested. [E. R. J., Nov. 11, '11.]



**\*Muskegon-Casnovia Land & Development Company, Muskegon, Mich.**—This company has been organized to promote the building of an interurban railway from Muskegon to Saginaw. Among those interested are: Norman B. Lawson and James L. Smith, Muskegon; W. W. Putney, Kent City; James L. Norris, F. R. Davis and John O. Fraligh, Casnovia.

**Columbus Railway, Light & Power Company, Columbus, Miss.**—This company will change the route of its line in northeast Columbus. Instead of extending down Lake Park the line will continue northward and make a loop around the plant of the Interstate Lumber Company.

**\*Fallon (Nev.) Electric Railroad.**—This company has been organized with a capital stock of \$300,000 to build an electric railway between Fallon and Stillwater. Officers: A. R. Merritt, president; Scott Harmon, treasurer; E. E. Winters, secretary, and C. A. Hascall, general manager.

**International Railway, Buffalo, N. Y.**—This company will begin at once to double-track its branch from Lockport to North Tonawanda. The work will be done as far as Oliver Street in North Tonawanda, and it is reported that the present right-of-way between Buffalo and North Tonawanda will be abandoned and a new line will be built over the right-of-way of the Frontier Electric Railway.

**Jamestown (N. Y.) Street Railway.**—This company plans to build a ½-mile loop during 1913.

**Black River Traction Company, Watertown, N. Y.**—Plans are being made by this company to double-track its line from High Street to the end of State Street in Watertown during the summer.

**Piedmont & Northern Railway, Charlotte, N. C.**—Plans are being considered by this company for an extension to Atlanta by way of Hartwell, Ga.

**North Carolina Public Service Company, Salisbury, N. C.**—Double-tracking its main line through the business center of Salisbury has been begun by this company.

**Tidewater Power Company, Wilmington, N. C.**—This company plans to build about 1 mile of new track during the year.

**Piqua & Bradford Traction Company, Covington, Ohio.**—Plans are being made by this company to begin work soon on a line to connect Covington and Bradford. J. H. Marlin is interested. [E. R. J., March 29, '13.]

**Tri-State Railway & Electric Company, East Liverpool, Ohio.**—During 1913 this company plans to build a 4400-ft. extension in Weirton.

**Hocking-Sunday Creek Traction Company, Nelsonville, Ohio.**—During 1913 this company plans to build 6 miles of new track from Chauncey to Athens.

**Ottawa (Ont.) Electric Railway.**—This company will lay new track on Queen Street as soon as the weather permits. The extension of the double-track Bank Street line from the exhibition grounds to Billings Bridge in Ottawa South, a distance of 1 mile, will be under way early next month.

**Portland Railway, Light & Power Company, Portland, Ore.**—This company plans to electrify the Mount Hood steam line from Gresham to the Mount Hood plant on the Bull Run River, a distance of 22½ miles.

**West Penn Railway, Pittsburgh, Pa.**—Work will be begun in the spring by this company on its line between West Newton and Hunkers. In the construction of this branch, it is said, four bridges will be required.

**Pottstown & Reading Street Railway, Pottstown, Pa.**—Work will soon be begun by this company on its extension to Spring City.

**\*Sioux Valley & Northwestern Railroad, Watertown, S. D.**—This company is being organized to build a 20-mile electric railway between Watertown and Strousetown. Among those interested are Frank Heathcote and J. C. Maxwell.

**Knoxville Railway & Light Company, Knoxville, Tenn.**—This company is cutting a new road at the south end of the Tennessee River bridge over which it will lay tracks for outgoing Island Home and Sevierville pike cars. Work is also being done by this company on the old roadway around Rose Mill in South Knoxville.

**Brownsville Street & Interurban Railway, Brownsville, Tex.**—S. A. Robertson, of this company, is reported to have contracted with the Brownsville Improvement Company to begin at once the construction of a 2-mile line from Brownsville to the Country Club.

**Dallas (Tex.) Consolidated Electric Street Railway.**—Extensive improvements are now being made by this company on three of its lines in Dallas. These improvements include the laying of new track and paving on McKinney Avenue, Haskell Avenue and San Jacinto Street.

**\*Dallas & Terrell Interurban Railway, Dallas, Tex.**—The Stone & Webster Corporation will build this railway if the right-of-way is given free of cost. The line will connect Terrell, Lawrence, Forney, Musquite and the Orphans' Home in Dallas. A. M. Somers, Terrell, is securing the right-of-way.

**Gainesville, Whitesboro & Sherman Railway, Dallas, Tex.**—Right-of-way has been secured and franchises granted by all the towns through which this line will pass. About 12 miles of grading has been done and plans are being made to begin work soon. The line will connect Gainesville, Whitesboro and Sherman.

**San Antonio & Austin Interurban Railway, San Antonio, Tex.**—Surveys have been completed by this company as far as New Braunfels, about one-third of the proposed line between Austin and San Antonio. The location and engineering work is being done by the Southwestern Engineering Company, Gunter Building, San Antonio. [E. R. J., April 5, '13.]

**Logan (Utah) Rapid Transit Company.**—This company plans to build 20 miles of new track during the year.

**Utah Light & Railway Company, Salt Lake City, Utah.**—Plans are being made by this company to begin work on the extension to Bountiful.

**Beloit, Delavan & Clinton Railway, Beloit, Wis.**—This company plans to build an electric railway to connect Beloit, Delavan and Clinton. Joel P. Dow, president of the Beloit Traction Company, is interested. [E. R. J., March 8, '13.]

#### SHOPS AND BUILDINGS

**Pacific Electric Railway, Los Angeles, Cal.**—This company is asked to consider plans to build a new passenger station in Hermosa Beach.

**St. John's Electric Company, St. Augustine, Fla.**—It is reported that this company plans to build soon a new depot on Anastasia Island.

**Boston (Mass.) Elevated Railway.**—Plans are being made by this company to build new repair shops at Forest Hills. The cost is estimated to be about \$300,000.

#### POWER HOUSES AND SUBSTATIONS

**Havana Electric Railway, Light & Power Company, Havana, Cuba.**—This company has awarded a contract to the Westinghouse Electric & Manufacturing Company for the complete equipment of a power plant now being built in Havana. The order, which involves about \$500,000, calls for three 12,500-kw Westinghouse-Parsons alternating-current turbo-generators, four 100-kw direct-current generators, nine 2,000-kw transformers, twenty 100-light regulators, 2,000 of the new type flame-arc lamps, one complete switchboard, twenty-four automatic stokers and the complete condenser equipment for the turbine.

**Augusta-Aiken Railway & Electric Corporation, Augusta, Ga.**—J. G. White & Company are building for the Augusta-Aiken Railway & Electric Corporation a substation on the canal bank on the site of the old West plant from which power from the Stevens Creek development on the Savannah River will be distributed. The distributing plant will be 58 ft. x 39 ft. and of brick, concrete and steel construction. The cost is estimated at about \$20,000 for the building and \$80,000 for the equipment.

**Public Service Company of Northern Illinois, Streator, Ill.**—An order has been placed by this company with the General Electric Company for a 300-kw rotary converter with starting panels and three 100-kw transformers for the power house.

**London (Ont.) Street Railway.**—It is reported that two new 500-hp turbo-generators and other electrical equipment may be required shortly by this company.



# Manufactures and Supplies

## ROLLING STOCK

**Manhattan Bridge Three-Cent Fare Line, Brooklyn, N. Y.**, is in the market for eight double-truck cars.

**Gastonia (N. C.) Traction Company** has ordered two single-truck cars from the Southern Car Company.

**North Carolina Public Service Company, Greensboro, N. C.**, has ordered one double-truck car from the Southern Car Company.

**Williamsport (Pa.) Passenger Railway** has ordered from The J. G. Brill Company six 28-ft. semi-convertible pay-within car bodies mounted on Brill 39-E trucks.

**New York State Railways, Rochester, N. Y.**, has ordered from the G. C. Kuhlman Car Company twenty-five pay-as-you-enter car bodies mounted on Brill 39-E trucks.

**New York, New Haven & Hartford Railroad, New Haven, Conn.**, has ordered five multiple-body dump cars from the Wason Manufacturing Company. An order is about to be placed by the company for fourteen additional cars of this type.

**Pittsburgh (Pa.) Railways** has ordered from the St. Louis Car Company fifty all-steel side-entrance low-step motor cars and trucks. The company has also ordered ten double-deck trail cars from the McGuire-Cummings Manufacturing Company. These cars will be similar in design to the one placed on trial in 1912.

## TRADE NOTES

**Gould Storage Battery Company, New York, N. Y.**, has removed its office to 30 East Forty-second Street, New York.

**D. C. & William B. Jackson, Boston, Mass.**, engineers, announce the appointment of Edward L. Moreland as manager of their Boston office.

**Cambria Steel Company, Johnstown, Pa.**, has named Edwin E. Slick, general manager of the works at Johnstown, vice-president of the company.

**Yale & Towne Manufacturing Company, New York, N. Y.**, has removed its general offices from 9 Murray Street to its new building at 9 East Fortieth Street, New York.

**Western Railway & Mill Supply Company, San Francisco, Cal.**, has changed its name to the Edward S. Sullivan Company. The company will continue to handle the same line of railway supplies.

**Tool Steel Gear & Pinion Company, Cincinnati, Ohio**, states that its tool steel gear and pinions have been specified for an order of thirty cars placed by the Southern Traction Company, Dallas, Tex.

**General Fire Extinguisher Company, Providence, R. I.**, has decided to issue \$1,000,000 new common stock at par with stock of record April 1. This will bring the total up to \$5,000,000, the limit of capital stock authorized.

**New York Steel Tie Company, Wilmington, Del.**, has been incorporated with a capital stock of \$1,000,000 to manufacture and deal in steel and concrete and steel ties. The incorporators are Francis H. Hoffecker, Thomas J. Brown, Jr., and Anthony McGarvey, all of Wilmington.

**Ackley Brake & Supply Company, New York, N. Y.**, has just completed a shipment of 360 Ackley adjustable brakes for use on the cars of the Sao Paulo Tramway, Light & Power Company, Sao Paulo, Brazil. With the installation of this equipment, every car in Sao Paulo will have been equipped with Ackley adjustable brakes.

**Robert W. Hunt & Company, Chicago, Ill.**, held its annual conference of the heads of departments and managers of various offices at the general office in Chicago during the week of April 7. Papers on the various methods of conducting the work of inspection and testing were discussed. On April 10 and 11 a party was taken on inspection trips to Gary, South Chicago and Buffington.

**Drew Electric & Manufacturing Company, Indianapolis, Ind.**, is the new name of the railway department of the Indianapolis Brass Company. This change has been effected so that the company might more properly indicate

by its name the business in which it is engaged. The company has also moved its general offices to the Traction Terminal Building, Indianapolis, and is increasing its manufacturing facilities. The company will continue to manufacture a complete line of overhead material and a large number of car equipment specialties.

**W. L. Holman Company, San Francisco, Cal.**, was recently adjudged an involuntary bankrupt by the United States District Court. The company has filed its schedule of debts and assets. The total liabilities are stated as \$143,651 and the assets at \$114,827. The heaviest individual creditors are The J. G. Brill Company, \$12,275 for material, and the Westinghouse Electric & Manufacturing Company, \$49,776. Of the assets \$2,851 is the value of machinery and tools, \$79,806 debts due the firm and \$21,315 unliquidated claims. Most of the debts are secured by promissory notes of the corporation.

**H. F. Keegan Company, Chicago, Ill.**, has been incorporated to engage in a general railway supply business. This company is an outgrowth of the supply business established by Harry F. Keegan, who is the president of the new company. He has associated with him several men prominent in the railway supply field. Among the companies whose accounts are handled by this company are the following: Tool Steel Gear & Pinion Company, Kerwin Machine Company, Hunter Illuminated Car Sign Company, Johnson Fare-Box Company, American Abrasive Metals Company. The organization is such that the company can handle general or territorial accounts, as branch offices will be established in the East and the West. The office of the new company will be in the First National Bank Building, Chicago.

**Allis-Chalmers Manufacturing Company, Milwaukee, Wis.**, which was formed recently to succeed the Allis-Chalmers Company as a result of the reorganization of the latter, took over the properties and began operation on April 16. J. H. McClement, chairman of the board of directors of the Allis-Chalmers Manufacturing Company, states that the receiver will be discharged shortly. He said also that no changes whatever are contemplated in the personnel of any of the departments of the former Allis-Chalmers Company. The business of the company during the receivership has been very good. During February under Receiver Falk the balance of \$37,000 after \$35,000 depreciation was earned. The net earnings in addition under the same amount of depreciation were \$10,000. The officers of the new company are as follows: Otto H. Falk, president; Max W. Babb, vice-president and general attorney; L. F. Bower, secretary; F. Woodland, treasurer.

**Dearborn Chemical Company, Chicago, Ill.**, announces that owing to the rapid development of its business in Canada a Canadian company has been organized recently to carry on the business there and make further extensions. A reinforced concrete plant is now being erected at West Toronto, with shipping facilities on the Canadian Pacific and the Grand Trunk Pacific railroads. The building will be completed about midsummer. The active head of the Canadian enterprise as vice-president and general manager is A. W. Crouch, who will make his home at Toronto. Mr. Crouch has been connected with the Dearborn Chemical Company for fifteen years, having established its Pittsburgh office, at which office he has been for the past eight years district manager, in charge of several of the company's branches. The Canadian company will specialize on the analysis and scientific treatment of boiler-feed waters both for steam railroads and stationary steam plants.

## ADVERTISING LITERATURE

**Hemingray Glass Company, Covington, Ky.**, has issued a sixteen-page booklet which contains some interesting facts about Hemingray glass insulators.

**Crocker-Wheeler Company, Ampere, N. J.**, has issued Bulletin No. 148, which describes and illustrates Crocker-Wheeler direct-current generators for railway service and other heavy duty from 150-kw to 160-kw capacity.

**United States Electric Signal Company, West Newton, Mass.**, has reprinted in pamphlet form a description of the overhead signal system which it installed at Yonkers. This account appeared in the *ELECTRIC RAILWAY JOURNAL* of Feb. 15, 1913.