

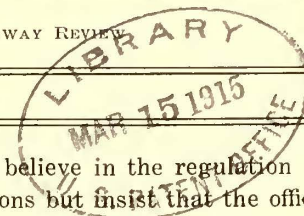
# Electric Railway Journal

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## NEW YORK ALIEN LAW AMENDMENT

The amended Spring bill that has just passed the New York State Senate points the way to an apparently workable settlement of the alien labor question in connection with subway construction in New York. The bill provides that preference shall be given to citizens over aliens in work on public contracts but that aliens may be employed where citizens are not available. The term "not available" would supposedly give contractors the proper freedom of action and make it possible for them to select their laborers on the basis of physical fitness and willingness to work for the wages paid to aliens. The bill does not admit the illegality of the exclusion of aliens, but in a hedging fashion it is a confession of the inexpediency and unfairness of so doing. As long as aliens are admitted to this country, they should not be deprived of equal opportunities of livelihood by exclusion from labor on public works or similar provisions. If they are to be seriously hampered in their labor, it would be better to attack the matter at the source and prohibit the immigration. As long as this is allowed, comity between state and national governments demands fair treatment of them in this country.

## LEGISLATIVE REPORT ON REGULATION

The most striking feature of the report of the legislative committee on the investigation of the Public Service Commission of the First District, New York, is that it was not unanimous. While the members of one political party, constituting the majority of the committee, condemn the commissioners, a minority, including all the members of the other political party, defends them. Even the majority is not entirely unanimous in its conclusions on its own findings. There was an excellent opportunity here for a careful and unbiased examination of the efficacy of commission regulation. At the time it was begun the New York system constituted a radical departure from those followed by other states, and the extent of the interests involved made the experiment which was initiated by Governor Hughes in 1907 of great importance to the country. The chief question on trial was whether, under our political system, it was possible to keep the commission free of politics, a condition which many doubted. The report of the legislative committee, dividing as it does on party lines, will emphasize this doubt so long as the law governing the appointment of the commissioners and their removal from office as it exists at present remains on the statute books. This conclusion will remain irrespective of the qualifications of the present commissioners in New York

for their office. We believe in the regulation of public utilities by commissions but insist that the office should be surrounded by as many safeguards to secure independence of judgment and action by the commissioners as in the case of justices of the Supreme Court. In no other way can good men be obtained or retained.

## CUTTING DOWN ASSOCIATION DUES

It is not often that an association makes a reduction in dues as the American Electric Railway Manufacturers' association has just done. This reduction, while temporary, is an indication of a desire on the part of the management to share with the members the saving which is to be effected by omitting special exhibits at San Francisco. The amount of money saved to each member is not great, but the impression created by the reduction cannot but be favorable. While the great industrial show which has come to be such an important feature of the annual conventions is the most conspicuous of the association's activities it is, after all, only a part of the machinery for fostering good relations between the operating and manufacturing divisions of the electric railway industry. Those who are in touch with the permanent headquarters know that it is a center of unceasing diligence. There is, therefore, a necessity for a reasonable income aside from that connected with the exhibits. The omission of the convention exhibits will be a relief to those who would otherwise have been responsible for its management. As a former association president said recently in the writer's hearing, few of the attendants at a convention realize the weight of the burden of responsibility, for the safety of the members and guests and the smooth working of the exhibit and entertainment plans, which rests upon the few who bear it. Any slight faults of the superstructure are so much more conspicuous than the virtues of the foundation that they are apt to cause more comment. A little relief this year will produce results in renewed effort on behalf of the 1916 meeting.

## REGULATION FROM A NEW QUARTER

While the investigation of the New York Public Service Commission has been going on Dr. S. S. Goldwater, Health Commissioner of New York, has hit upon a plan which he thinks has solved the problem of public service regulation. His method is simple. It consists simply in invoking the police power which under the law is granted to the health commissioner to make the railways do what he thinks proper. An obvious merit of this plan is that it obviates extended hearings with counsel on both sides, any division of opinion among several commissioners and any necessity



of a staff of legal, engineering or transportation experts to advise the commission. Under this new system of regulation, if the health commissioner thinks that the railway cars should not carry more than one-and-a-half times their seating capacity, the conductors of the cars must close their gates when that number is on the car, and those who cannot get on the cars must walk home. Another advantage of Dr. Goldwater's plan, besides its simplicity, is its comprehensiveness. Its application is by no means confined to the surface railways. If the water supply of the city becomes insufficient, it is dangerous to health, and the health commissioner may order more aqueducts. Theaters inadequately supplied with exits must be closed until the condition is remedied. Building laws must be modified according to the ideas of the health commissioner, and parks must be opened in different parts of the city because they are necessary as breathing spaces to the public. Still another advantage of Dr. Goldwater's plan is that it reduces all of the city offices and commissions to one, with the possible exception of the police department, which we assume will be retained in order to carry out the orders of the health department. We commend the idea to the consideration of students of municipal problems.

#### THE "JITNEY" SITUATION

The "jitney" has now reached Portland, Me., having completed the journey from California to Maine in less than four months, because it was only last November that its advent in Los Angeles began to attract attention in other cities. Some railway men profess to see the wane of the movement and base this idea upon the adverse legislation which has been passed in different cities. Others do not yet see any material reduction in the "jitney" movement. They base this belief on the large number of second-hand automobiles in the country and the desire of their owners to get the most out of them before they are thrown on the scrap heap, the favor of the public at large for novelties, and the influence which the automobile manufacturers will presumably be willing to exert to stimulate the demand for both old and new automobiles. This influence is apt to be powerful, especially when exerted through local dealers, agents and branch managers, all of whom are large advertisers for their local business in the daily papers.

Those who do not see an early end to the "jitney" movement say that it may not be difficult to prove that the "jitney" is a losing proposition; that an attempt to substitute "jitneys" for electric cars on streets in any large numbers would produce the worst kind of congestion, and that to meet "jitney" competition the electric roads would have to reduce their service to the suburbs and perhaps increase their long-haul fares. But these points, they believe, would not greatly influence the owner of an old car that has practically no value except in "jitney" service, nor would it deter a great many people from patronizing a "jitney" instead of a street car if it carried them to the place to which they wished to go.

How, then, can the situation be combatted by all those who realize the conditions under which the electric railways are carrying people long distances for a 5-cent fare?

One thing which can be done, and must be done, is to correct misstatements as to the cost of "jitney" operation when they appear in the local papers. Articles of this kind will not be uncommon during the next few months. The "jitney" bus is a novelty and, as such, appeals to the editor of the average local daily paper. The arrival of the first "jitney" in a town makes a good "news" item, and the arrival of a second or third will make another. It is to be expected, also, that stock companies will be organized to operate buses of this kind by promoters who see through them an easy plan to draw money from confiding stockholders in small amounts by alluring statements. Railway men who see figures of this kind in print and know the facts should not hesitate to set the public right as to the profits which can be made in this kind of transportation. They should also point out the most conspicuous objections of the unrestricted "jitney" for general transportation, such as the lack of regulation over their routes and schedules, the dangers to women from riding in closed cars, the unsanitary features of the cars as compared with electric cars which are cleaned regularly, perils to pedestrians, etc. We believe that the "jitney" will not be a permanent competitor of the electric car, even for short distance business, but we also believe that its disappearance can be hastened by active local attack upon its weak features by the electric railway companies.

#### IMPROVEMENT OF CONVENTION PROGRAMS

We know of hardly any place where careful, conscientious planning will return a larger amount of money for work expended than in the drafting of a convention program. If we assume that the average expenses per delegate attending a convention lasting a day is from \$10 to \$20 and the value of his time the same amount, we get from \$20 to \$40 as the amount which each delegate or his company will spend for his attendance. With 100 delegates at a convention we have from \$2,000 to \$4,000 as the expense of a convention with that number of attendants and lasting for but one day. Expressing this in the electric railway man's fiscal unit, it is from 80,000 to 160,000 nickel fares. This is a considerable amount of money, and every effort should be made to see that the association as well as the delegates get full return for its expenditure. Assuming that the sessions cover six hours, the cost of this time is of the order of \$10 per minute. Now, a considerable part of the value of a convention to those in attendance is represented by the papers and discussions presented; that is, by the technical proceedings. There are other advantages, such as meeting representatives of other companies and exchanging experiences with them in private conversation, but, after all, the official program is the *pièce de résistance* of the meeting, as well as the means of gathering the largest attendance and of eliciting the best exchanges of experience. For this reason the com-



mittee on subjects is one of the most important which any association can appoint.

In this connection the Southwestern Electrical & Gas Association has established an interesting plan to secure a program of this kind. The secretary, in laying his plans for the annual convention some two months off, has called the attention of the members to the fact that it would be a waste of time "to give up the various sessions to matters full information as to which may be obtained at any time from the secretary or from the technical papers or from text books." In consequence, the members are urged to send in suggestions as to topics of a practical but unfamiliar nature so that the papers and discussions may give information not available elsewhere and where the experience of the members will be most valuable to each other. The plan is a good one in principle and should also be so in practice, as, indeed, it has proved in previous sessions of the Southwestern Association. Progress is being made so rapidly in the electrical field that there should be no dearth of good subjects, and we have no doubt that the Southwestern Association can find this year a sufficient number of them to make a live program for its 1915 meeting.

Why would it not be a good idea for a sectional association in search of a good topic to select one which has been considered at one of the other sectional sessions? The subject could be introduced by the presentation of a summary of the paper as read at the other convention and an abstract of the conclusions reached there. The ELECTRIC RAILWAY JOURNAL believes in the value of sectional associations and has always made a feature of the publication of their proceedings, so that this information is easily available. Starting at this point, those in attendance could give their views without retracing any ground already covered, and in this way a consensus of opinion from all parts of the country would be obtained on different subjects which would be of the greatest value to the industry.

#### ENERGY REGENERATION IN HEAVY TRACTION

In the steam railway electrifications on lines having grades the possibility of energy regeneration has had a potent influence in the selection of system. Not that the actual saving in energy was necessarily a prime consideration, but the accompanying braking effect, with reduction in brakeshoe wear, has been considered a feature to be secured if possible. Assuming that total resistance would be about the same for a train ascending a grade and descending it while regenerating, it should regenerate all of the power due to the grade in excess of 1 per cent. It should, of course, be capable of holding back when going down any grade that it can climb. Actual data of regeneration on a section of the Italian State Railways were given in an article by G. Pontecorvo which appeared in last week's issue of the ELECTRIC RAILWAY JOURNAL. These showed a regeneration of 50 per cent on a grade of 3 per cent to 3½ per cent and a reduction of two-thirds in brakeshoe wear. There is no doubt, therefore, that practice bears out theory in this case.

One complication of the regenerative systems has been the necessity for taking up surplus power supplied by a train descending a grade when there was not a demand for it from other parts of the line. This has to be provided by rheostats in the power house, as described in the article referred to above, as it would scarcely be practicable to take it up by train brake application.

The three-phase system, which has had some vogue abroad, has made its claim to favor on the basis of its natural or inherent regenerating ability. When one thinks of regeneration this system instinctively comes to mind. But the thinking usually stops there because the imagination immediately conjures up a picture of networks of overhead, entangled wires, at the entrance to some familiar freight yard, for example. As a consequence, we have in this country but one lonely three-phase electrification in full commercial operation to-day, and this is so far away that very little is heard of it. In this Great Northern Cascade tunnel plant, braking qualities were considered of prime importance, but energy saving was not, as the water-power could be used for nothing but the railway and hence had little value after having served its purpose.

The next step in regeneration progress is the single-phase-three-phase electrification now rapidly approaching completion on the Norfolk & Western in West Virginia. In this three-phase power is produced in the locomotive from single-phase in the heretofore little-used phase converter. In this case, also, economical braking was considered more important than energy saving. Unofficial reports from that region indicate that the converters are doing their work in first-class fashion.

In the meantime the regenerative principle is being applied in the designs for the great Chicago, Milwaukee & St. Paul electrification, and details of the regenerative equipment are awaited with great interest. To date the d.c. series motor has not been considered a satisfactory generator although it has been so used with the magnetic brake to a limited extent. The St. Paul plan, whatever it is, will constitute the third important step in the series. To offset the additional complication of equipment, the d.c. regenerative scheme will have an advantage over the a.c. in that the motors become self-exciting generators and do not therefore depend upon the power house for excitation. A three-phase locomotive would, of course, "run away" if it were not held by the brakes if for any reason power went off the line.

These examples show conclusively that for heavy trains on steep grades regeneration is practicable. That to date it should have been used primarily for the sake of a by-product is interesting. On general principles of energy conservation it is gratifying to realize that we shall shortly have in operation three heavy electrifications, all employing different types of equipment and all regenerating energy on down grades. Some valuable data should soon be available for comparison from the regeneration standpoint.



# The New York Municipal Car—Motors, Control, Conduit and Collectors

Tapped-Field Motors Give Economical Operation in Both Local and Express Service—The Control Ties in with the Auxiliary Circuits and Its Switches Are Placed in One Box to Obtain Lowest Weight and Simplest Inspection—Conduit Runs Have Been Reduced by Eliminating Separate Conduits for Each of the Wires in the Main Circuits

The motors, the control and the accessories of both on the New York Municipal car embody the same principle of progress that characterizes the features of design and equipment which have been previously described in these columns.\* As the following paragraphs will show, the New York Municipal Railway Corporation has not only taken advantage of the latest advances in the art but it has also set up new standards and devised new practices which will accrue to the benefit of other electric railway operators.

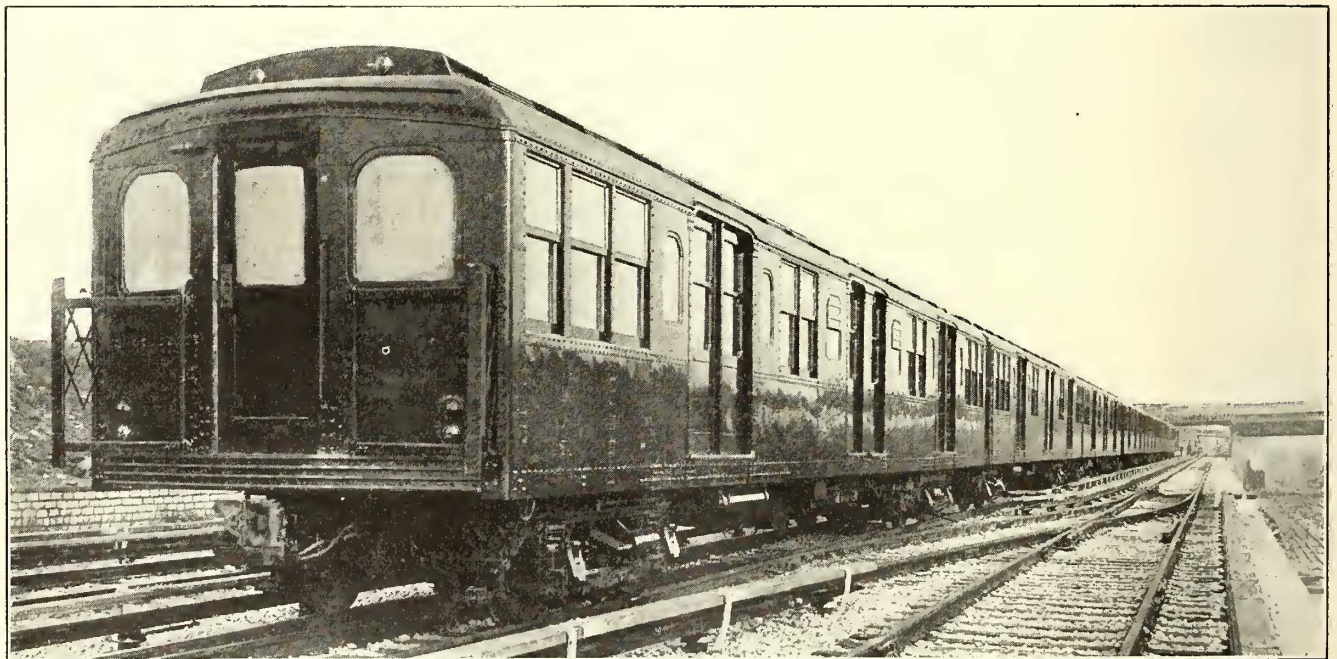
## CHARACTER OF FORTHCOMING SERVICE

To appreciate the reason for electing to use the tap-field motor in the forthcoming service it is well to point

ft. and the average 7230 ft. The length of this run will be 43,380 ft.

On a typical combined express and local run like that from Forty-eighth Street, New York, to Coney Island via a 7000-ft. tunnel and the Brighton Beach line the shortest distance between stations will be 1263 ft., the longest, 9870 ft. and the average 4573 ft. The length of the run will be 82,327 ft. In general the local runs will be longer but the express runs shorter than on the present rapid transit lines of New York.

It was obvious that the tap-field motor was ideal for running conditions of the character described, inasmuch as such a motor could be run on full field in local service and on tapped field in express service. Self-



NEW YORK MUNICIPAL CAR—THE FIRST EIGHT-CAR TRAIN READY FOR A TRIAL RUN ON THE NEW SEA BEACH LINE

out that three distinct services—local, express and a combination of these two—are contemplated. For purely local runs the schedule speed will be 15 m.p.h. with an average station stop of 20 seconds, and for purely express service the speed will be 25 m.p.h. with an average stop of 30 seconds.

On a typical local run like that of Fifty-ninth Street, New York, to Coney Island, by way of the Manhattan Bridge and Brighton Beach line, the shortest distance between stations will be 1100 ft., the longest 6220 ft., exclusive of the Manhattan Bridge, and the average 2430 ft. The length of this run will be 68,090 ft. plus the 10,560 ft. of the Manhattan Bridge.

On a typical express run like that from Forty-eighth Street, New York, to Sheepshead Bay, the shortest distance between stations will be 3930 ft., the longest, 9870

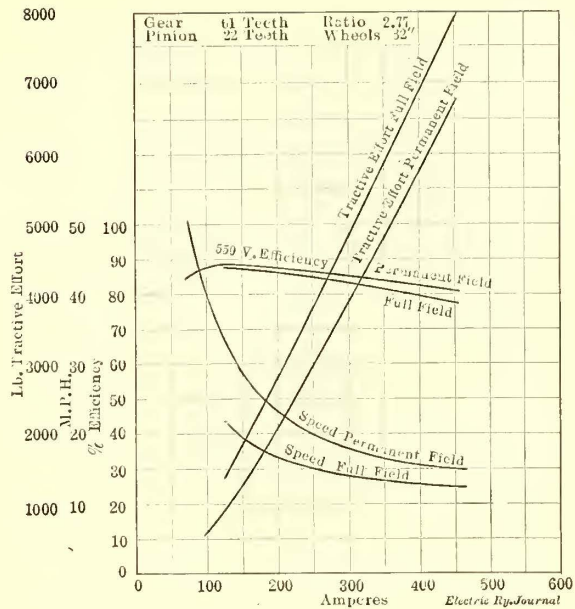
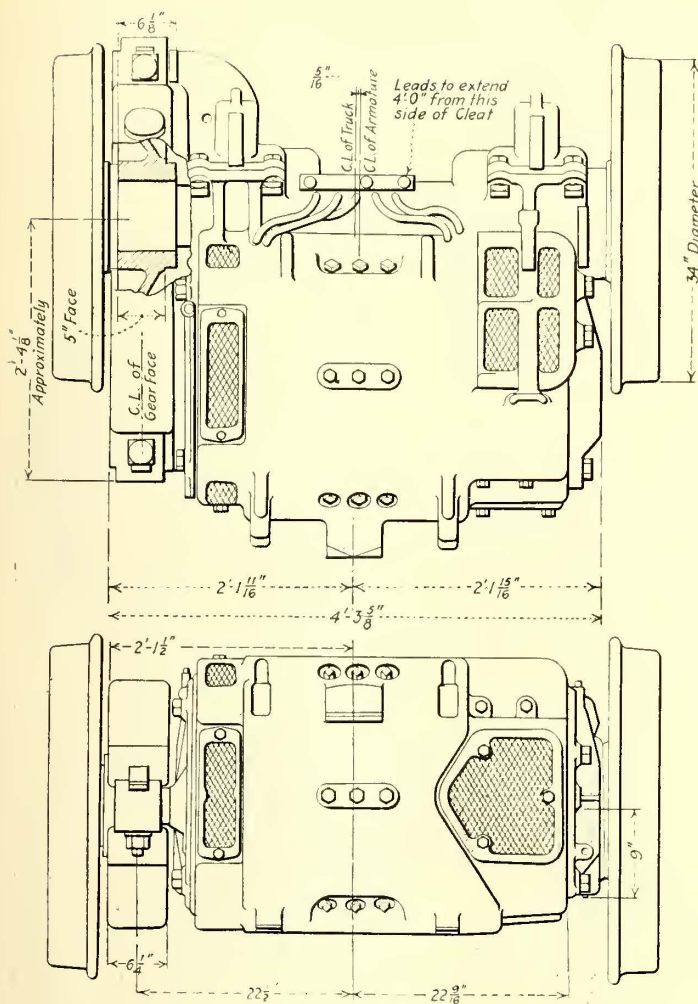
ventilation was also desirable for the motor because the limiting weight per driving axle made it essential to combine greatest output with least weight. Besides this, the motor equipments will be kept in almost continuous service, as some of them will have only three minutes lay-over at terminals during continuous working periods of eighteen hours. Local trains will consist of two to five cars each and express trains of two to eight cars each.

## THE MOTOR

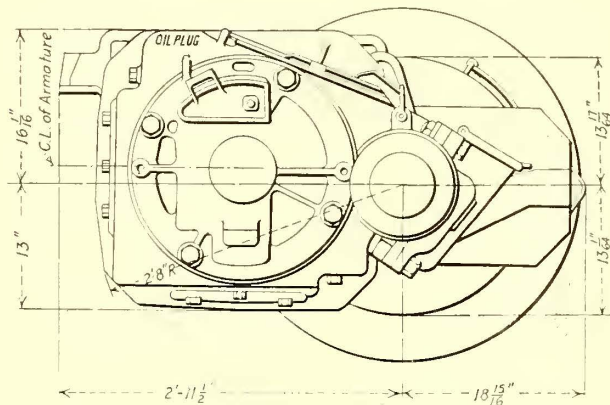
The motor selected for the first 100 cars (two per car) is the GE-248-A commutating pole type with fan assembled on the pinion end of the armature head. The frames are also constructed with openings in the covers. The motor weight, including the gear, pinion and gear case, is 5975 lb. The motor, under the A. I. E. E. standards, has an hourly rating of 160 hp at 600 volts.

\*See New York Municipal Car articles on "Design," "Body" and "Trucks, Brake Rigging and Draft Gear," June 6, June 13 and Dec. 26, 1914, respectively.

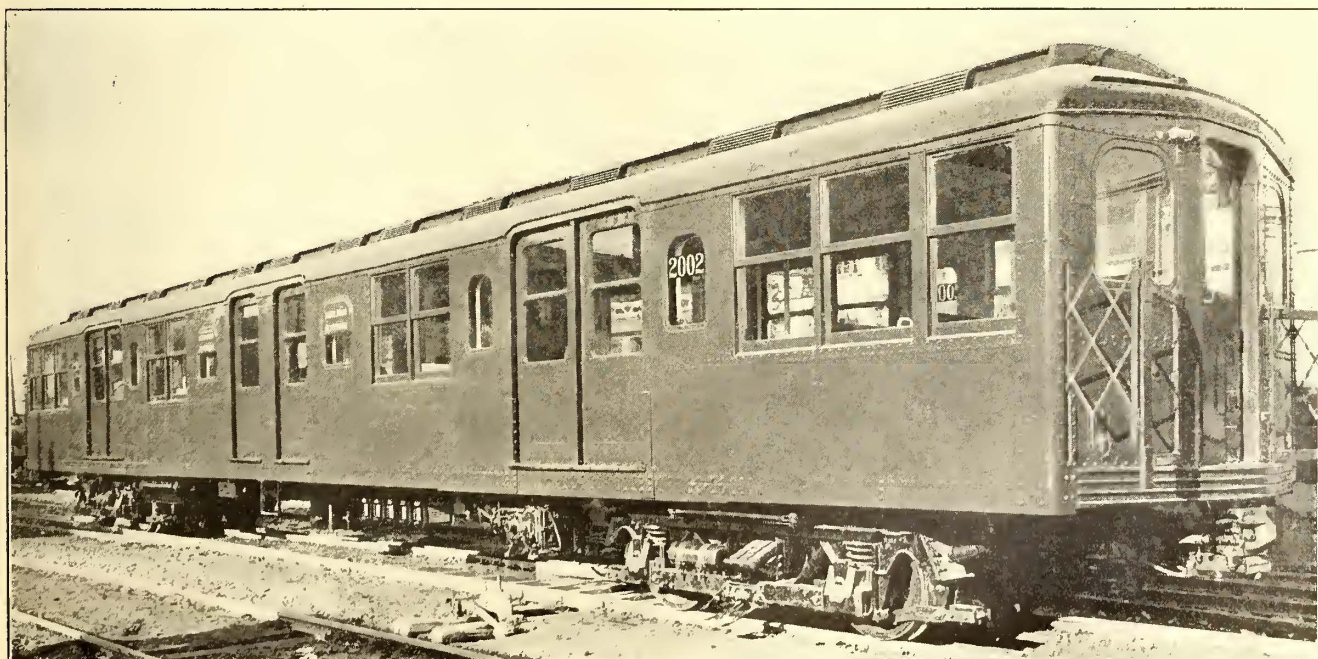




NEW YORK MUNICIPAL CAR—CHARACTERISTIC CURVES OF 160-HP TAP-FIELD MOTOR

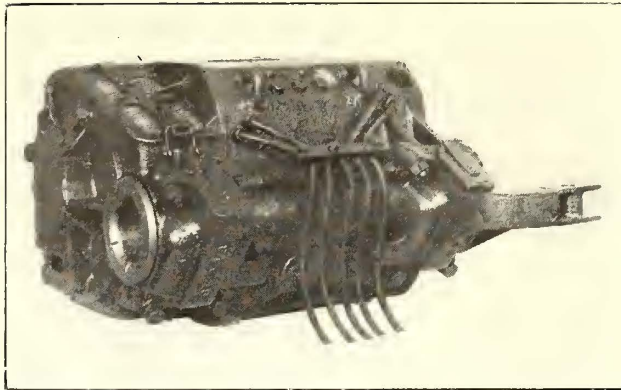


NEW YORK MUNICIPAL CAR—OUTLINE DRAWINGS OF 160-HP MOTOR, USED TWO PER CAR, SHOWING ALSO ARRANGEMENTS FOR VENTILATION, OUTSIDE OIL GAGE WELLS AND ARRANGEMENT OF LEADS



NEW YORK MUNICIPAL CAR—COMBINED SIDE AND END VIEW OF COMPLETELY EQUIPPED CAR





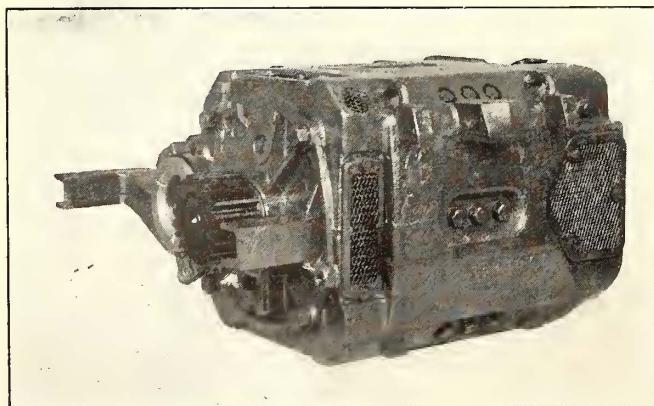
NEW YORK MUNICIPAL CAR—AXLE SIDE, COMMUTATOR END OF MOTOR

This motor must operate over a voltage range of 450 to 750 volts, and its continuous ratings up to 600 volts are as follows: 140 amp at 300 volts, 147 amp at 400 volts, 154 amp at 500 volts and 157 amp at 600 volts, with a temperature rise in the windings not exceeding 75 deg. Cent. when all the covers are off. The general characteristics are shown in the curves on page 497. The ability of two of these motors to propel at an average of 550 volts a car weighing 113,000 lb. fully-loaded (200 passengers at 140 lb. each) is based on an assumed adhesion of 27.5 per cent between the driving wheels and rails, a curve resistance of 0.8 lb. per ton per degree of curvature and the following train resistance values:

M.P.H.	Pounds Per Ton	M.P.H.	Pounds Per Ton
8	7.26	30	11.86
10	7.45	32	12.21
12	7.81	34	12.76
14	8.14	36	13.20
16	8.47	38	13.75
18	8.91	40	14.19
20	9.35	42	14.74
22	9.79	44	15.29
24	10.23	46	15.95
26	10.72	48	16.50
28	11.22	50	17.05

The train resistance values were derived from tests made on near-by rapid transit lines.

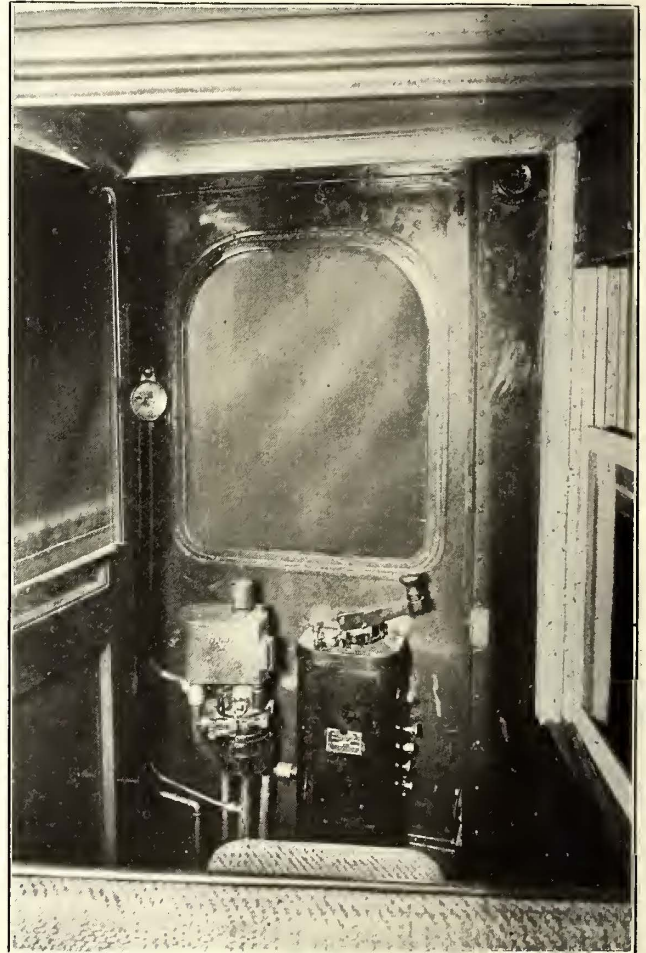
The motor frame is of the box type, of cast steel fitted with a removable wearing plate of hardened steel on the motor suspension lug, and with cast bales for handling the completely assembled motor. A feature in the construction of the field coils is that their final coating of insulating compound has the unusually high melting point of 135 deg. Cent. Other features are that metal shields are fastened on the inner perimeter of the coils to prevent chafing on the pole pieces and that all the field coils are held in place against flat steel springs to prevent their movement in service.



NEW YORK MUNICIPAL CAR—SUSPENSION SIDE, PINION END OF MOTOR

The brush-holders, which are designed to permit 1-in. safe radial wear of the commutator, have shunts so constructed that they will not have any wearing action against the brush-holder casting. The brushes are placed in staggered relation, and their tension is adjustable between 3 lb. and 10 lb. The mica insulation between the commutator bars is cut 3/64 in. and extends 1/8 in. back of the commutator neck.

Lubrication has received special attention in the design of this motor. The bearing housings are supplied with separate oil gage wells and waste chambers. By removing the wooden plug of the external well and inserting a gaging ruler, the shopman can determine the quantity of oil in the gage well and if necessary can replenish the oil supply without exposing the lubricating packing to dust or needless handling. Oil de-



NEW YORK MUNICIPAL CAR—INTERIOR OF CONTROL CAB WITH CURTAIN RAISED

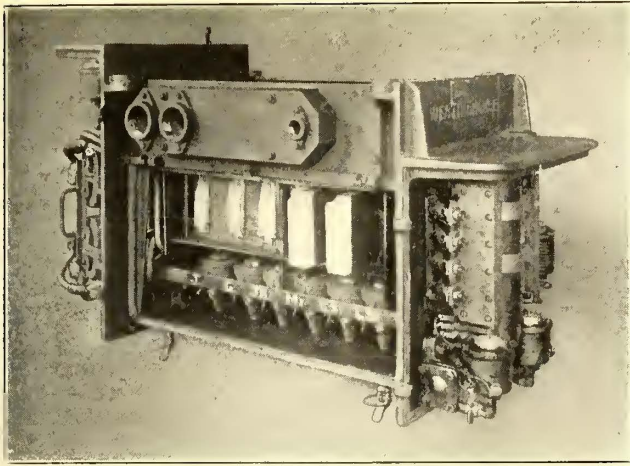
Note projection of motorman's seat, which is hinged to back of passenger seat.

flectors are provided on the armature shaft to prevent the oil from working into the motor windings, onto the commutator or onto the brush-holders. The housings also contain grooves for conducting overflow oil to an auxiliary chamber on the outside of the motor. Wool waste is used in both the armature and axle bearings.

As the motors are of self-ventilating type special care was taken to prevent, as far as possible, dust from entering the bearings or wearing surfaces, dust guards being used at exposed points. Further, the axles are entirely inclosed in a shield to exclude dust from the inner ends of the bearings.

Safety straps are provided to prevent the fall of the lower half of the gear case should the nuts from the clamping bolts be lost. The gears and pinions are





NEW YORK MUNICIPAL CAR—SWITCH GROUP-CONTROL BOX WITH WIRING AND PIPING COMPLETE, OPENED TO SHOW THE MAIN SWITCHES AND PK HEAD

J, G, J R and M2 are main bridging switches for going from series to parallel.  
 LS-1 and LS-2 are circuit-breaker switches which open on overloads and short-circuits.

made of Grade F forged steel and have a ratio of 61:22. The gearing has teeth with a stub profile to meet the severe conditions anticipated.

**CONTROL**

The control system is designated by its manufacturer, the Westinghouse Electric & Manufacturing Company, as Type 100 ABF. While it represents no great change in principle from a combination of the Westinghouse ABF and PK types of control, old elements have been combined in new ways and special duties have been added, as hereinafter detailed.

In this control the following features have been met for the first time:

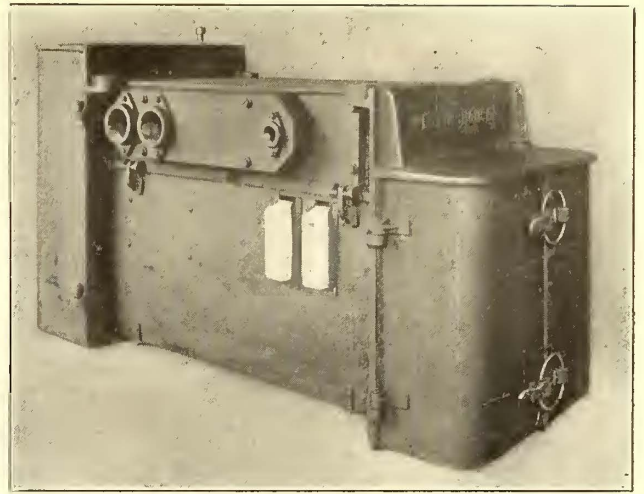
First—Combined design, which includes provision for the use of the storage battery furnished for emergency car lighting, common use of apparatus of the brake and electrical equipment, provision for signal and other functions in the control equipment and particular adaptability to the use of automatic electric couplers.

Second—Selective acceleration, the current input being determined by the load.

Third—Operation of sixteen motor cars from a common train line.

Fourth—Use of a common eighteen-wire train line, including provision for auxiliary circuits.

Fifth—The combination of all control apparatus in a



NEW YORK MUNICIPAL CAR—SWITCH GROUP-CONTROL BOX CLOSED WITH EXTENDED ARC CHUTES OF CIRCUIT-BREAKER SWITCHES EXPOSED

single box to obtain the lowest weight and the simplest inspection.

The company considered also the use of control current taken direct from the 600-volt line, but it decided in favor of the 34-volt battery train line for the following reasons:

First—In a 600-volt train line if the power is off the first car, none is available for operating the control for the rest of the train.

Second—Since the brake actuating circuits should be independent of line voltage, it would be objectionable to have a 600-volt control circuit in a common train line with the low-voltage brake circuit.

Third—The use of the battery permits the bucking of motors for emergency braking if the line power fails.

Fourth—Low voltage secures greater freedom than line voltage from derangement of circuits such as those due to grounding and short-circuits.

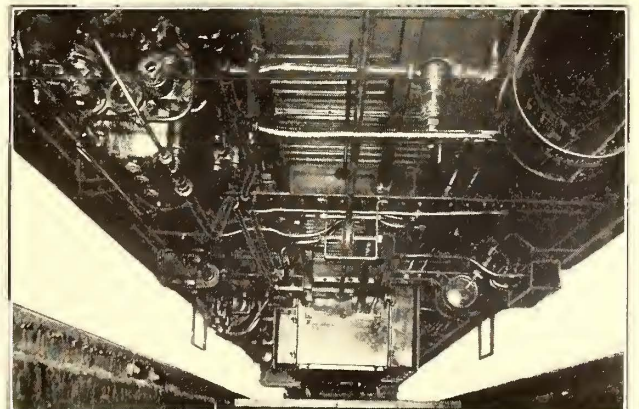
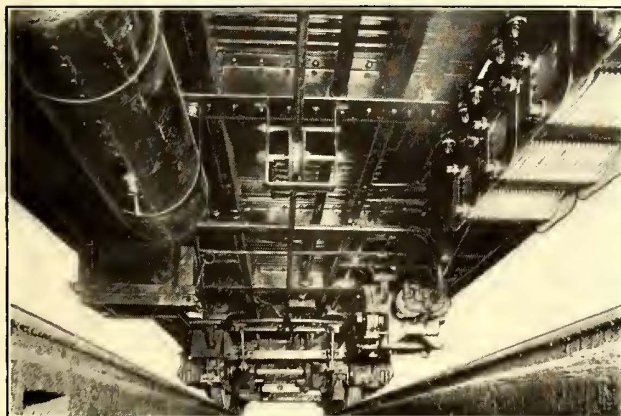
Fifth—A material saving in the cost of control power is secured.

Sixth—Installation is simpler, with the elimination of switches, fuses and resistance elements.

Seventh—There is greater certainty of reliable operation of a low voltage automatic electric coupler.

Eighth—There are no high-voltage connections in the control apparatus above the floor of the car.

Ninth—The storage battery required for emergency lighting and brake control can, without change, supply power for the control purposes.



NEW YORK MUNICIPAL CAR—TWO VIEWS OF THE UNDERFRAME, SHOWING ARRANGEMENT OF AIR AND ELECTRICAL APPARATUS AND THE LAYOUT OF THE CONDUIT



Tenth—Simpler design and installation of accessory apparatus, such as automatic electric couplers, is secured.

Eleventh—The form and design of apparatus and contacts for handling the control circuit are simpler, with the elimination of burnouts on the master controllers and interlock fingers.

#### BATTERY AND TRAIN LINE

In order to make the battery circuit available for signal lights, door circuit interlocks and to insure correct operation for a maximum possible train length of 1075 ft. the control battery had to be raised from the old standard of 14 volts to 34 volts. The cross-section of the train wires was also increased to avoid excessive drop, each conductor in the eighteen-conductor train line consisting of seven strands of No. 24 wire. The door signal circuit involves the use of train wires which extend in series to a distance equivalent to more than twice the train length.

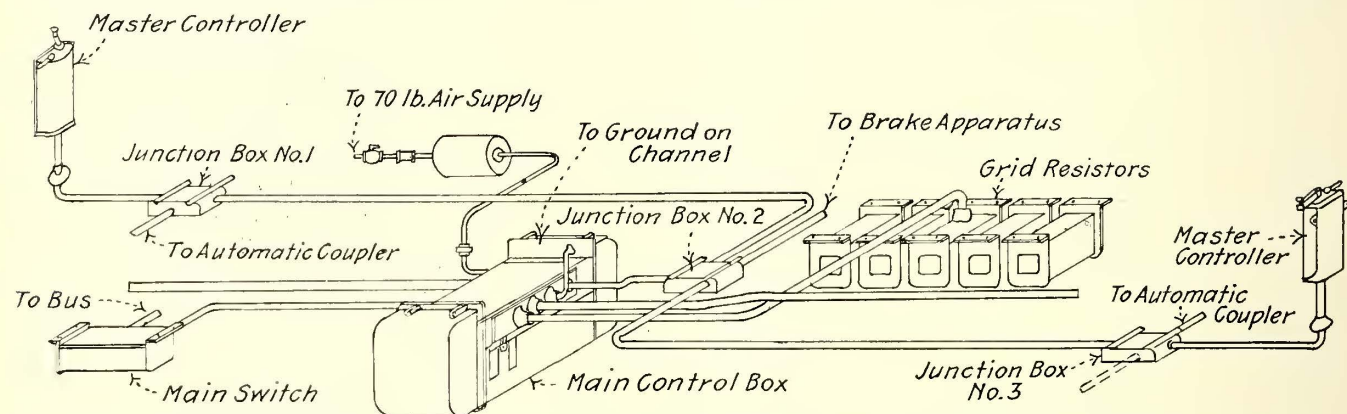
All control circuits are energized from storage batteries on each car, all of which are permanently grounded on the negative side. The valve magnets require approximately 1.5 amp per car when the motors are in series, and 1.8 amp per car when the motors are in parallel. The storage battery has an estimated ca-

and third notches of the controller, respectively. On the first notch the main drum also completes the battery plus circuit for the operation of the reverser magnets to throw the reverse drum to the desired position.

The interlocking on the main switches, reversers and the commutating switch is such that all operation must take place in the sequence indicated, and all main circuit apparatus is protected against injury due to the false operation of any part. It is necessary to complete the circuit for three wires at the master controller before power can be applied to the motors. These wires are the series wire, one or the other of the reversing wires, and the wire which is the return circuit for all magnet coils. With this provision and low-voltage control practically absolute insurance is given against any possibility of a faulty connection in the train line which might cause the operation of the train to be taken from the control of the motorman.

#### THE CONTROL BOX

Another innovation in control equipment was promoted by the customer's specification that all of the usual under-car motive power apparatus, namely, unit switches, commutating switch, reverser, circuit-breaker and relays should be mounted in one box to effect a large saving in the length, weight and cost of conduit:



NEW YORK MUNICIPAL CAR—ORIGINAL SCHEMATIC LAYOUT OF EQUIPMENT AND CONNECTIONS TO MASTER CONTROLLERS AS SUBMITTED BY THE MAKER; THE LAYOUT ON THE CAR IS SOMEWHAT DIFFERENT, BUT THE EQUIPMENT IS THE SAME

capacity of not less than 20 amp-hr. Charging current is available from the compressor during operation. Therefore the battery is mainly for emergency lighting, end and rear marker lights and for the operation of the electro-pneumatic brake circuit.

A total of eighteen wires is included in the train line, disposed as follows: Battery positive, one; brakes and speed control, five; local signal circuits between cars, one; starting signal and door interlock circuits, one; control circuits, seven; extra, three; total, eighteen.

The train line has three junction boxes, and includes wires for the operation of the magnet valves of the air-brake system, suitable outlets being provided for the circuits to the brake apparatus in the center of the car, and for the engineer's valves at each end. This includes provision for the automatic speed control device and for synchronizing the compressor governors.

The air supply for the operation of the switching apparatus and the reverser of the control box is taken from the common air brake supply outside the reducing valve of the air-brake system.

With the reverse drum of the master controller in either the forward or the reverse position, the battery plus circuit is completed to the main drum of the controller, which in turn energizes the series wire, the progression wire and the multiple wire, on the first, second

and also to simplify inspection and to avoid shopping a car for several days when overhauling of the main control parts is required.

This control box includes the following parts:

- Two unit switches acting as circuit breakers.
- Four unit switches for series paralleling the motor.
- One drum type reverser.
- One drum type commutating switch.
- One limit switch.
- One overload trip relay.
- One main circuit terminal board.
- One control circuit terminal board.

Unit construction is the basis of the switch design, and each switch, magnet, jacket and cylinder may be removed independently of the other parts of the apparatus.

The control is so designed that the upper compartment of the control box accommodates a main circuit junction box. By removing the motor leads and resistance leads from the terminal board and from a few of the studs the main assembly can be lowered from the car by loosening four supporting bolts, following which a new group may be substituted. It is estimated that within thirty minutes one man with the proper hoisting equipment can remove and replace the switch group.

The top frame of the switch group box is constructed to hang from the center sills of the car underframe by means of four lugs, no hanger straps being used. As



shown in one of the under-car views, this box is mounted under the center of the car in such fashion that a man can walk around it on all sides. He is therefore able to remove with ease the doors which cover each compartment and then inspect the group and unit switches and the terminal board above them.

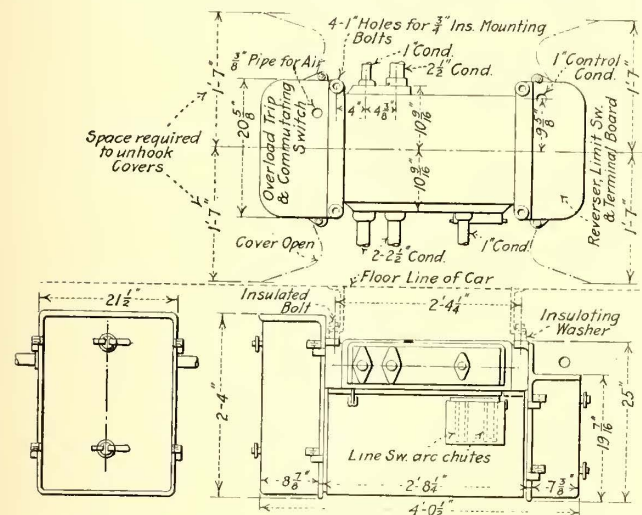
The general layout of the equipment in the control box is shown in part in an accompanying halftone and drawing, and further data on the location of individual parts are presented in the following paragraphs.

The current limit relay is placed alongside the reverser while the 34-volt terminal board is placed beneath the

out is provided to protect the field fingers in case a motor-lead becomes open-circuited. In passing from series to parallel, the *J* switch is closed, thus short-circuiting all resistance before the drum falls back to the first position, and in shutting off from any position on the master controller all the unit switches open before the drum starts to move backward.

For the specific manipulation of the main circuits, six steps are provided in series and four in multiple, with closed circuit or bridging transition between series and multiple to insure uniform acceleration. Each contact with this method carries the current for a single motor only. The two switches which are used as circuit breakers are isolated and have a separate vent for the expulsion of the arc to atmosphere. They differ from the other unit switches only in the use of extended arc chutes, thus making all switch parts interchangeable. The remaining four unit switches establish the motor circuit connection to secure the series-parallel connection. In the operation of the overload trip all these switches open at the same time.

For the minor changes in the motor circuit the PK head is used. The PK contacts care simply for changes



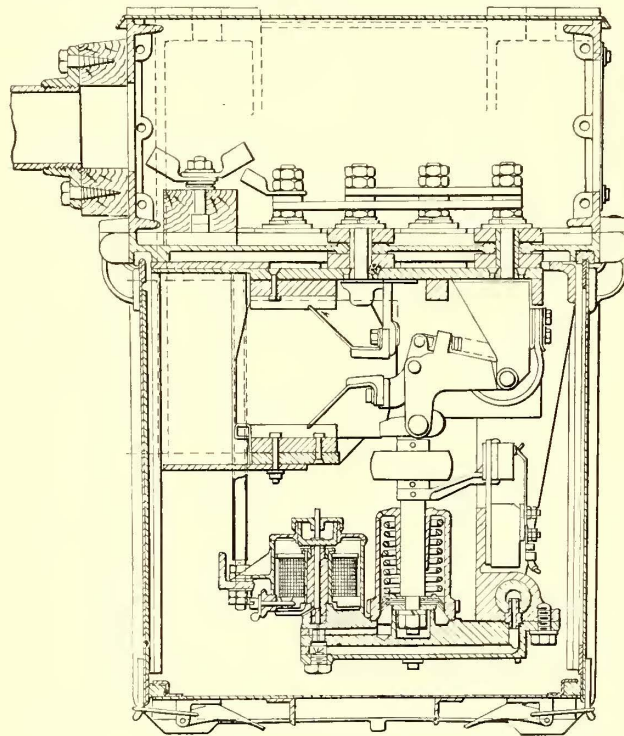
NEW YORK MUNICIPAL CAR—OUTLINES OF SWITCH GROUP, PK HEAD AND REVERSER

limit switch at the reverser end of the switch group. To this board is brought the conduit through which the control wires are run. All the necessary wiring connections for the motive power circuits were made at the factory, the only job left to the user being the attachment of ten motor leads, eight resistance leads, eight control wires, one ground lead and one trolley lead.

The overload trip relay is mounted next to the limit switch and consists of a plunger actuated by an arm which lifts at a predetermined current in the trip coil. The relay is calibrated in five steps at 100-amp intervals, starting with 450 amp which is approximately twice the one-hour rating of the motor. Contact disks on the plunger open the control circuits to all switches, and these circuits are re-established by unlatching the plunger by means of the reset coil, which may be energized by pressing a button in the top of the master controller after the main handle has been returned to the off position.

On the opposite end of the group of switches is mounted the PK head. The double air cylinder operating this drum is controlled by the unbalanced pressure system whereby the drum is moved from notch to notch under the control of the limit switch. Full pressure of air is maintained in both cylinders, and is intermittently exhausted from one side in order to allow the drum to move from notch to notch. After the drum has advanced, cutting out resistance and changing the field circuits to normal field in series, it returns to the first position after the closing of the *J* switch and advances again after the bridging and parallel connection has been made by the unit switches.

It will be noted that in normal operation no arcs can be broken on the commutating switch and drum, since the main switches are so arranged that no current is passing through the resistance fingers at a time when they are leaving the ground. However, a magnetic blow-



NEW YORK MUNICIPAL CAR—CROSS-SECTION THROUGH UNIT SWITCHES

in resistance and for the changes in the field connections. They carry current for a single motor only. The adoption of this modified form of PK equipment eliminated eight control switches, made possible the use of a control box 4 ft. in length instead of 6 ft., and reduced the weight of the switch group to 850 lb.

The course of the circuit is as follows:

From the 500-amp position of the knife-switch connection to the current collectors, the circuit passes directly to the control box and to the overload trip. From the trip the circuit divides, passing through the two circuit-breaker switches, and then through each of the two motors with their starting resistance, and to the ground connection on the car body.

As shown on the main schematic diagram the circuit passes through *LS-1* on the first notch; through the switching resistance; the No. 1 motor; the main starting resistance; through the *JR* switch; the resistance



for the No. 2 motor, and through the No. 2 motor and the limit switch to ground. *LS-2* closes for the second notch, and the remaining notches to full series are secured by cutting out the main starting resistance.

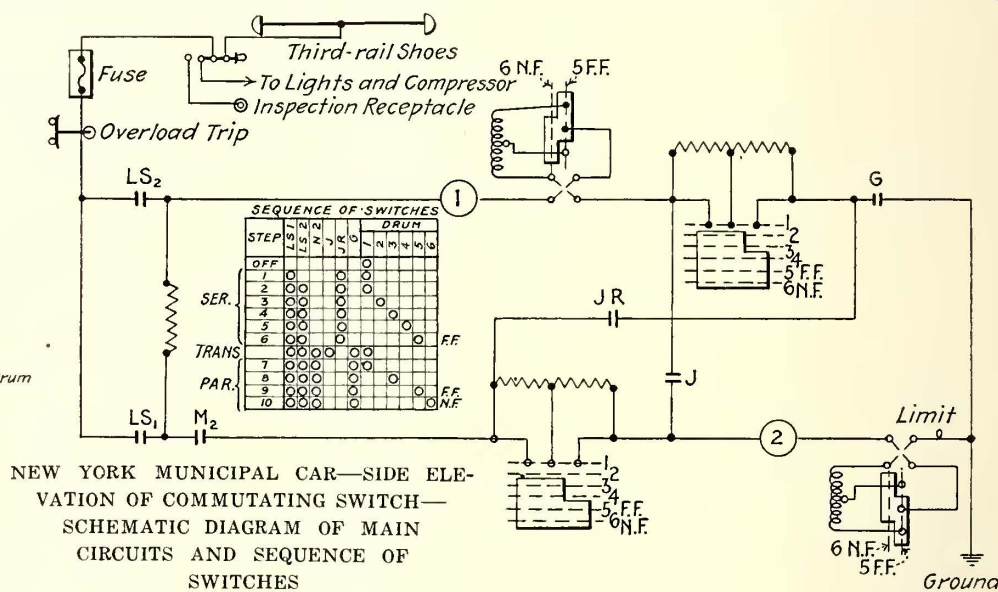
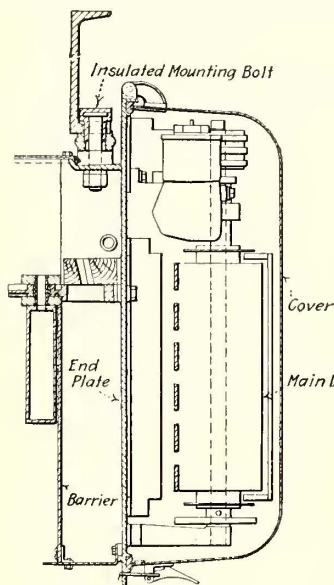
In passing from series to parallel, the bridging transition circuit is formed through the switches *M-2*, *J* and *G*. After the *J* switch is opened, the motors are in parallel with resistance, the resistance is then cut out step by step and the field connections changed to normal field in the same manner as was done in the series connection.

The line relay, which is placed on a switchboard located between the two center doors instead of being in the control box, is energized directly from the 600-volt circuit. Its contact disk is so connected in the control circuit that all unit switches open whenever power fails, permitting the control to advance in regular sequence when power is restored, without the master controller

In addition to the usual contacts and fingers for the control circuit, the master controller has interlock contacts mounted on the reversing-drum shaft to provide for three auxiliary contacts. Two of these contacts are for signals and one is for tail-lights. These unusual features will be described in a later article in connection with the door signals, marker lights and train line coupler. The reverse drum acts as a switch to close the battery circuit to the control.

Still another new feature is that both polarities of the control circuits are broken at the controller. This is accomplished by running an extra train line wire for the negative side of the magnet coils. As no attempt has been made to ground the return circuit of the control, local grounds cannot create false circuits or cause false operation.

The line relay cut-out will permit the feeding up of the control when power is off the line and the bucking



NEW YORK MUNICIPAL CAR—SIDE ELEVATION OF COMMUTATING SWITCH—SCHEMATIC DIAGRAM OF MAIN CIRCUITS AND SEQUENCE OF SWITCHES

being returned to the off position. The relay is so adjusted that it will lift at approximately 350 volts and drop at approximately 150 volts. With this range, the relay has sufficient travel to insure positive action of the contacts and contact disk. The line relay also has auxiliary contacts to light the emergency lamps.

MASTER CONTROLLER

The master controller is equipped with the usual three notches for switching, series and multiple positions and with a separate reversing drum and the usual deadman's handle. The movement of the reverser handle to an operating position energizes the control-circuit supply, thereby eliminating an auxiliary cut-out switch. Inserted in the case at the right-hand side of the controller are an emergency cut-out switch for the 34-volt control circuit, a circuit-breaker reset button, a line relay cut-out button and marker-light switch button.

The deadman's handle on this controller acts by the application of battery current to the emergency train line wire. This application instantly energizes all emergency valves in the train upon the relaxation of the motorman's grasp at any position of the handle, whether the reverser is forward or reverse. By the same operation a special device completely cuts off power from the propulsion circuits.

The marker-light switch was added to the controller by the New York Municipal Railway. The signal lights which indicate that all doors have been closed are also installed in the master controller to avoid too many individual pieces of apparatus in the cab.

of the motors, as an emergency method of stopping the train should power be off the line and the air brake fail.

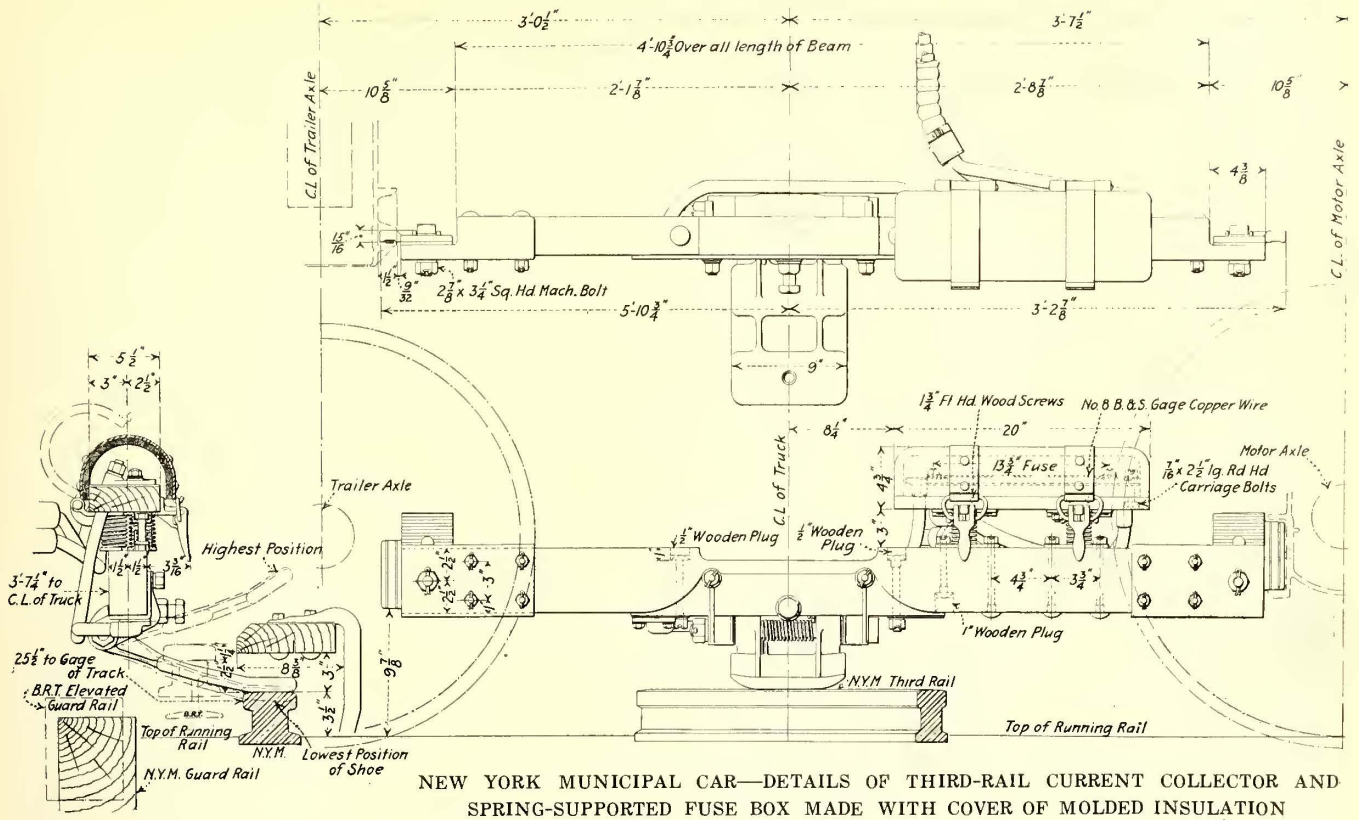
SELECTIVE ACCELERATION

In order to obtain the same rate of acceleration with all passenger loads from minima to maxima there is provided an extra winding on the limit switch which modifies the current input to the motors. The amount of current through this winding is controlled from a switch operated in connection with the empty and load brake mechanism. The adjustment of this mechanism corresponds directly to the deflection of the bolster springs under load.

CONDUIT

In the earlier installations of equipment separate conduits were used for each of the wires in the main circuits. In the present installation, however, multi-conductor cables are used. Consequently one large conduit pipe serves for each set of motor leads. Likewise, all resistance leads are formed into a cable and are carried from the switch group to the resistors through a single conduit with a Crouse-Hinds eight-conductor outlet. In order to reduce the weight of the conduit itself, material of the following character was used: For straight runs inside the car, circular steel tubing of 1/32-in. wall, inside diameter corresponding to standard pipe sizes, fitted at each end with one Elcon conduit fitting, lock-nuts and spring lock washers; for straight runs under the car sherardized steel tube with suitable thickness of wall and inside diameter to correspond to standard



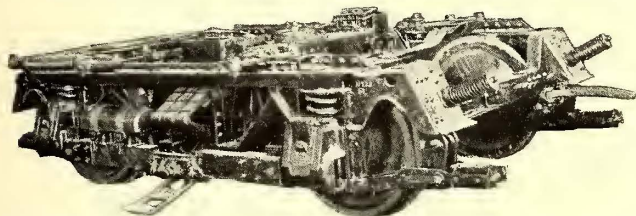


NEW YORK MUNICIPAL CAR—DETAILS OF THIRD-RAIL CURRENT COLLECTOR AND SPRING-SUPPORTED FUSE BOX MADE WITH COVER OF MOLDED INSULATION

pipe size fitted at each end with one Elleon conduit fitting, lock-nuts and spring lock washers; for runs requiring bends, "Sheraduct" with lock-nuts and spring lock washers. By the use of this system of conduit, the weight was reduced to a great extent.

THIRD-RAIL COLLECTOR AND KNIFE SWITCH

The current collector is the usual type of overrunning shoe with rack adjustment at the ends but with a bolt adjustment in the center to take care of finer adjust-



NEW YORK MUNICIPAL CAR—MOTOR TRUCK CARRYING FUSE BOX WITH COVER OF MOLDED INSULATION

ments within a range of 1 in. The terminals are somewhat unusual in having a taper fit so that by removing a nut the connection may be slipped off very readily. In order to eliminate the breakage of fuses and connections due to vibration, the fuse box is spring-supported. Another feature is that the cover of the box is formed of a single arch of Hemmit molded insulation. Instead of building the box of wood with joints and fastenings, in the present construction only the base of the box is of wood, and this is covered with transite. The shoe beam is supported from the journal boxes with proper link action for any difference in movement between the two boxes from which it is carried. It has no permanent fastenings but is slipped into 1 5/8-in. deep side pockets on the side of each box. Between each shoe-beam rack and journal box is a compression spring to prevent rattling of the beam. Armored cable is used for the connections to the car body, but rigid conduit is employed as the conductor between the shoe-beams of

the same truck. Castle nuts with cotters are used throughout.

In conclusion it should be noted that the main knife switch not only has a 500-amp position for the connection to the current collectors described, but also a 75-amp position. With the switch in the 75-amp position the light, compressor and heater circuits are connected to an inspection attachment within the switch box, through which line voltage may be plugged from any convenient point for inspection purposes when it is desired to have the source of power disconnected from the main circuit. This main knife switch is of single-pole double-throw break type.

Qualifications of a Railway President

In a recent lecture delivered in the city of New York, H. A. Bullock, secretary New York Municipal Railway Corporation, outlined the following as the qualities which must be possessed by the successful modern railway president. He must have the ability to formulate sound policy and to present it to the directors or the stockholders for approval; to grasp the financial problems of an enterprise so as to keep the directors accurately and intelligently advised of the results expressed in gross and net earnings, as affected by a continuance of the existing investment of a railroad property, the investment of new money by way of additions or extensions and the diminution of the existing investments by means of the abandonment or sale of any part of the railroad's operating system; to comprehend the practical operating problems as presented to him; to give practical interpretation to technical propositions made from time to time; to retain the mastery of the administrative work of the property, and to interpret the difficult problems which the railroad has to meet.

Prof. S. J. Lochner, University of Akron, has inaugurated a series of lectures on "Elementary Electricity," discussing this subject to its conclusion. The lectures are free to anyone who wishes to attend. They are given on Tuesday and Friday of each week at the university.



# Transportation Exhibits at San Francisco

The Electric Railway Exhibits at the Panama-Pacific Exposition Divided Between Buildings, the Palaces of Transportation and of Machinery—The Transportation Exhibits Are Briefly Described

"Educational" is the theme upon which the exhibits at the Panama-Pacific International Exposition have been planned and assembled. It has been the aim to make displays contemporaneous rather than historical, but development and progress in modes of transportation during the past decade are effectively portrayed. It is to be noted that much of the machinery and electrical apparatus is shown in actual operation, and where feasible mechanisms are cut in sections to expose the working parts. Common to all the transportation exhibits there is the tendency to exemplify fundamental principles and to bring out the essential features and

beautiful and truly universal that the attendance is so large, in spite of conditions that might have been thought to lessen interest in it. At the end of the first week of the exposition, when this article was written, the total attendance had been 618,998, as against 253,577 at Chicago and 325,144 at the St. Louis Exposition during the corresponding periods.

## PALACE OF TRANSPORTATION

The field of transportation has perhaps more progress to record and more to show that is new than most of the departments into which exhibits are classified.



PANAMA-PACIFIC EXPOSITION—GENERAL VIEW OF GROUNDS AND BUILDINGS

functions of the apparatus so as to facilitate explanation and study.

A well-known American writer has pronounced the exposition to be "the most economical" of any he had ever seen, and those who heard the remark, thinking of the \$50,000,000 which the exposition has cost and the maintenance items, such as \$1,000 per night for illumination, asked him to explain. He did so by pointing out that it was economical from the standpoint of the visitor who could acquire in a short time at this exposition more information and a more accurate and practical knowledge of modern processes and machines than had ever before been possible. And probably it is for this reason as much as because the exposition is so

In the Palace of Transportation are to be seen representations and examples of every phase of modern methods of transportation, and these are designed not merely to impress the layman but to instruct and stimulate the ideas of the man familiar with the field. For instance, the electric railway manager will find great interest in comparing the inventions and appliances for safeguarding life and property, he will examine the latest types of car equipment and will profit much by an inspection of the wide variety of railway supplies in which manufacturers have taken pride in presenting their very latest productions. The range of exhibits extends from a time-card file to a large articulated electric locomotive and covers both freight and passenger



PANAMA-PACIFIC EXPOSITION—PALACE OF TRANSPORTATION FROM THE MARINE GARDENS

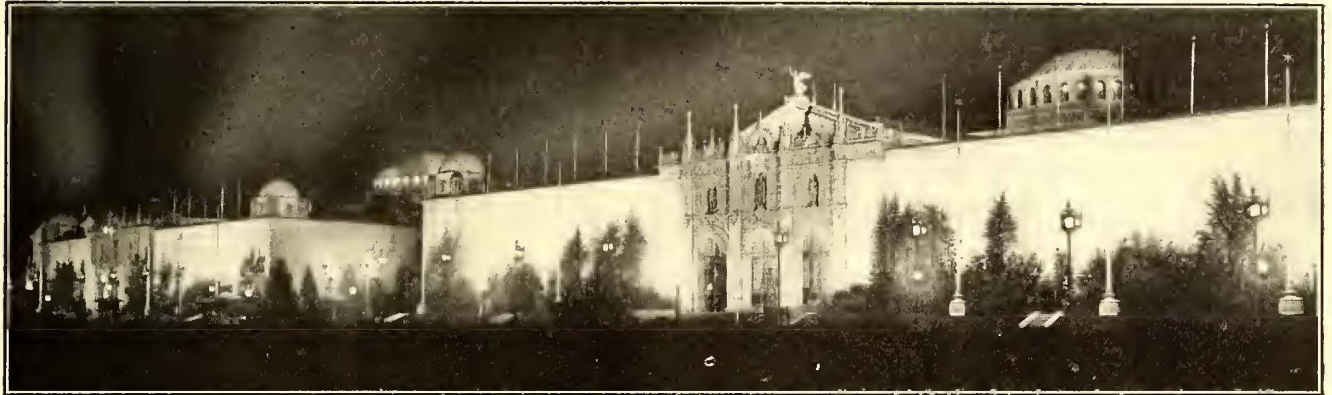


rolling stock. Several of the companies represented have added moving picture equipment to their displays in order to show to better advantage actual operating conditions.

Although it is not feasible to chronicle here even a partial list of the more interesting exhibits, it is worth while to note, by example, the general tone of displays. For instance, in the center of the building is a standard 4000-hp Pennsylvania electric locomotive exhibited by the Westinghouse company. This locomotive is shown on a turntable which revolves so that spectators can see all sides of it. Types PK and HL control are also shown. In the General Electric exhibit there are five types of locomotives, complete and ready for operation in as many classes of service. Two Type MK control equipments are mounted ready for service, connected by standard control jumpers and air-brake equipment for train operation. Each of these is provided with a GE-247 motor mounted on trucks beneath the racks, and the whole represents the complete underframing

locomotive equipped also with a trolley arm; beyond is a newly developed electro-pneumatic brake demonstrating its operation on an interurban train, and next may be the stereomograph showing on a ground-glass screen the most interesting features of power-house and substation apparatus which the exhibitor could collect and ship to his booth. Other exhibits in this building are track special work, steel ties, car wheels and maintenance of way and construction equipment.

However, the foregoing has touched on only typical examples in that portion of this building devoted to electric railway interests. There is also much space devoted to other methods of transportation; fourteen steam locomotives are shown and 12,000 sq. ft. of space is occupied by automobile exhibits. Nor are all of the displays of interest to the electric railway field within the Palace of Transportation, for the scope of exhibits in the Palace of Machinery includes, for example, perhaps even more electrical equipment covering motors of all types, as well as luminous and measuring ap-



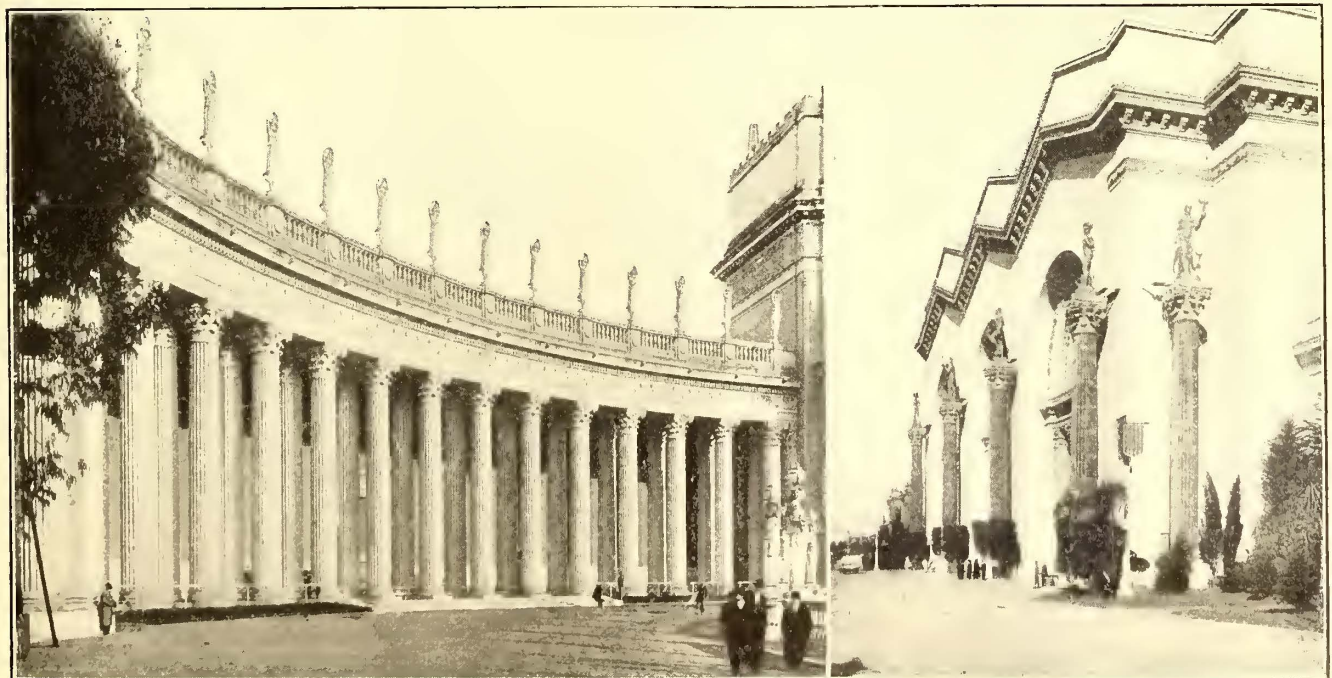
PANAMA-PACIFIC EXPOSITION—ILLUMINATION OF PALACE OF TRANSPORTATION

of a two-car train so assembled that the operation and connections are easily observed and can be compared with illuminated diagrams on either side of the racks.

A lightning arrester demonstrating the dissipation of high-voltage charges through a device connected in 600-volt, 1200-volt or 1500-volt circuits without interrupting normal service may attract the visitors' attention, and next there will be an Edison storage-battery

paratus. Here there are also a variety of steam generators and accessory appliances, together with internal combustion engines in operation which are attracting special attention as applied to the generation of electric power.

A list of some of the principal exhibits by manufacturers in these two buildings is found on another page in this issue.



PANAMA-PACIFIC EXPOSITION—FAÇADES OF PALACES OF TRANSPORTATION AND MACHINERY

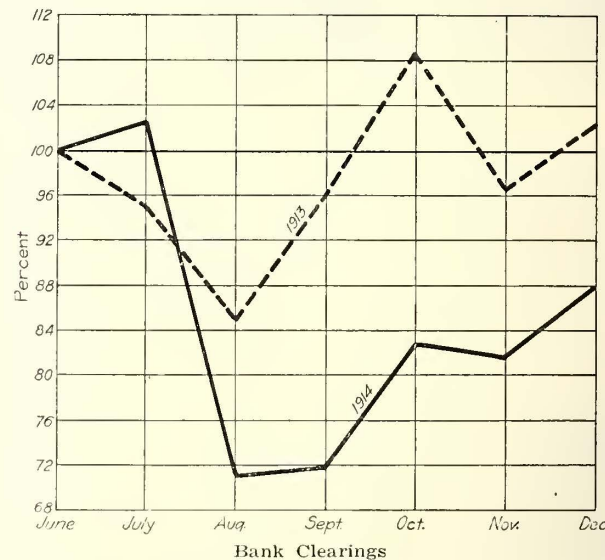
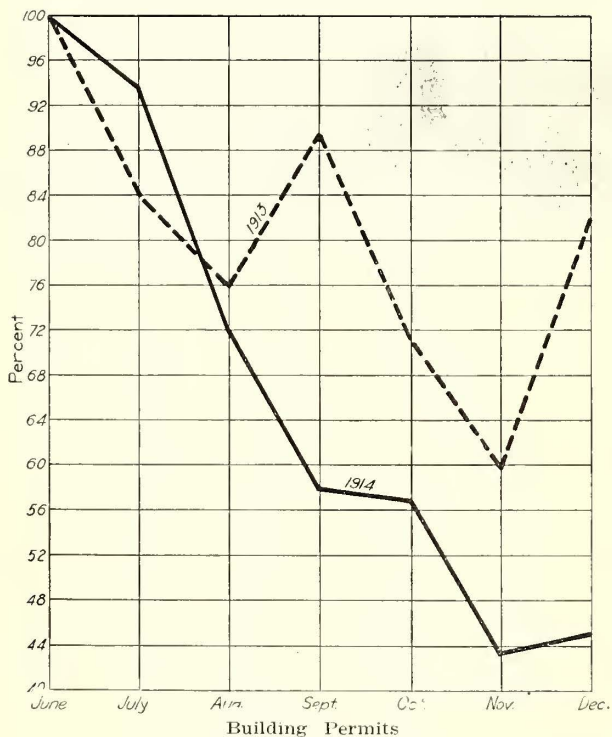
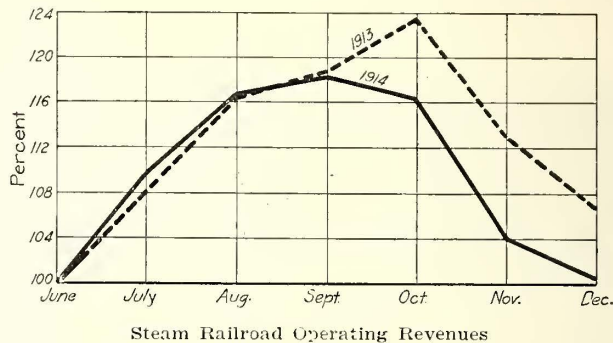
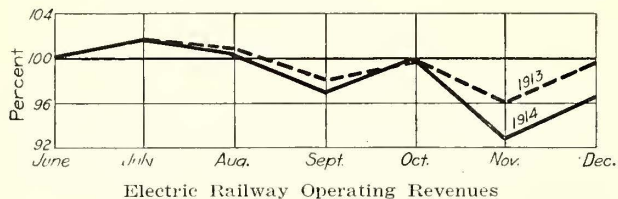


# Electric Railway Statistics

Comparison by Bureau of Fare Research with Statistics of Steam Railroads, Bank Clearings and Building Construction for a Period of Seven Months from June, 1914, to January, 1915

In the issue of the ELECTRIC RAILWAY JOURNAL for Jan. 23, page 183, there appeared a report from F. W. Doolittle, director of the bureau of fare research of the American Electric Railway Association, containing statistics from various sources showing the trend of electric railway earnings, steam railroad earnings, bank clearings and building permits for the months of June, July, August and September, 1914. Mr. Doolittle has continued this study and has just completed seven months' comparisons by including the months of

Such figures as are available indicate a relatively small seasonal variation in electric railway earnings when the country as a whole is considered. A large variation is unlikely, inasmuch as a very considerable part of the business of every electric railway company come from the residents of the community in which each road operates, and the use by residents is largely determined by necessity and habit. The casual riding by floating population and riding to parks and places of amusement vary from month to month in each



STATISTICS OF ELECTRIC RAILWAYS, STEAM RAILROADS, BUILDING PERMITS AND BANK CLEARINGS FOR LAST SEVEN MONTHS OF 1913 AND 1914 IN PER CENT OF JUNE FIGURES IN EACH YEAR

October, November and December. The following statements present his conclusions.

The accompanying diagrams show the trend of the items considered during the last seven months of 1914. As before, there was no adequate means of making a comparison between electric railway earnings in 1914 and in 1913, so that the bureau has confined its observations to a running comparison, beginning with the month of June. In connection with the diagrams, the relations shown in the following table should be borne in mind:

	June to December inclusive, 1914	1913	1914 in per cent of 1913
Gross earnings — steam roads	\$1,766,383,915	\$1,897,499,370	93.09
Bank clearings	83,279,767,186	97,631,749,952	85.30
Value of building permits. (50 cities in 24 states)	309,052,330	359,450,023	85.98

city, but when the country as a whole is considered, these variations equalize, and the result is a greater uniformity than is the case with the traffic of steam roads.

There are available figures covering electric railway operating revenues during the last six months of 1913 for seventy-nine companies, well distributed throughout twenty-one states. These figures are shown graphically in the diagrams as of possible interest, although they are not for the same companies as are included in the figures for 1914. While the 1913 figures are for fewer companies than those included in the 1914 totals, they represent about the same monthly operating revenue. Inasmuch as the 1913 figures begin with July, they are for that month made to coincide, as to the percentage of June, with those of 1914.



TABLE I. OPERATING REVENUES AND EXPENSES OF NINETY-FIVE ELECTRIC RAILWAY COMPANIES IN THE UNITED STATES

Month 1914	United States				East				South				West			
	Revenues		Expenses		Revenues		Expenses		Revenues		Expenses		Revenues		Expenses	
	Amount	Per Cent, June	Amount	Per Cent, June	Amount	Per Cent, June	Amount	Per Cent, June	Amount	Per Cent, June	Amount	Per Cent, June	Amount	Per Cent, June	Amount	Per Cent, June
June	\$14,480,768	100.00	\$8,765,233	100.00	\$9,065,625	100.00	\$5,464,759	100.00	\$373,831	100.00	\$217,461	100.00	\$5,041,312	100.00	\$3,083,013	100.00
July	14,816,092	102.32	8,802,032	100.42	9,275,197	102.31	5,439,557	99.54	389,328	104.15	226,675	104.24	5,151,567	102.19	3,135,800	101.71
August	14,400,857	101.11	8,554,051	97.59	9,206,150	101.55	5,283,684	96.69	379,754	101.58	220,951	101.60	5,054,953	100.27	3,049,416	98.91
September	14,086,223	97.28	8,280,978	94.48	8,787,396	96.93	5,135,966	93.98	353,198	94.48	211,104	97.08	4,945,629	98.10	2,933,908	95.16
October	14,358,872	99.16	8,502,027	97.00	8,882,022	97.97	5,208,037	95.30	355,805	95.18	244,750	112.55	5,121,045	101.58	3,049,240	98.90
November	13,268,486	91.63	7,948,299	90.68	8,206,637	90.52	4,864,467	89.02	316,957	84.79	197,437	90.79	4,744,892	94.12	2,886,395	93.62
December	13,704,117	94.64	8,136,271	92.83	8,501,471	93.78	4,940,310	90.40	334,996	89.61	191,469	88.05	4,867,650	96.56	3,004,492	97.45

TABLE II. OPERATING REVENUES OF 105 ELECTRIC RAILWAY COMPANIES IN THE UNITED STATES

Month 1914	United States		East		South		West	
	Amount	Per Cent, June	Amount	Per Cent, June	Amount	Per Cent, June	Amount	Per Cent, June
June	\$19,113,164	100.00	\$13,698,021	100.00	\$373,831	100.00	\$5,041,312	100.00
July	19,459,649	101.81	13,918,754	101.61	389,328	104.15	5,151,567	102.19
August	19,162,513	100.26	13,727,806	100.22	379,754	101.58	5,054,953	100.27
September	18,486,986	96.72	13,188,159	96.28	353,198	94.48	4,945,629	98.10
October	19,100,164	99.93	13,623,314	99.45	355,805	95.18	5,121,045	101.58
November	17,687,749	92.54	12,625,900	92.17	316,957	84.79	4,744,892	94.12
December	18,393,919	96.24	13,191,273	96.30	334,996	89.61	4,867,650	96.56

TABLE III. COMPARATIVE VARIATIONS OF BANK CLEARINGS\*

Month	1914		1913		1912	
	Amount (last 000,000 omitted)	Per cent of June	Amount (last 000,000 omitted)	Per cent of June	Amount (last 000,000 omitted)	Per cent of June
June	\$13,957	100.00	\$14,285	100.00	\$14,023	100.00
July	14,298	102.44	13,606	95.25	13,914	99.22
August	9,893	70.88	12,108	84.76	12,418	88.55
September	10,604	71.68	13,728	96.11	14,168	101.04
October	11,604	83.14	15,545	108.82	16,823	119.97
November	11,154	79.92	13,762	96.34	14,470	103.19
December	12,365	88.59	14,594	102.17	15,842	112.97
Total	\$83,279		\$97,631		\$101,660	

\*Compiled from figures in *New York Evening Post*.

TABLE IV. VALUE OF BUILDING PERMITS\*

Month, 1914	United States		East		South		West	
	Per cent of Same month, June, 1914	Per cent of Same month, June, 1913	Per cent of Same month, June, 1914	Per cent of Same month, June, 1913	Per cent of Same month, June, 1914	Per cent of Same month, June, 1913	Per cent of Same month, June, 1914	Per cent of Same month, June, 1913
June	103.00	100.00	105.96	106.00	77.82	100.00	97.53	100.00
July	115.23	93.86	95.76	73.64	150.32	116.44	167.84	166.48
August	97.58	71.82	105.95	72.15	88.71	79.07	75.59	69.53
September	66.33	57.73	67.38	57.40	65.44	43.57	62.99	61.11
October	82.80	56.96	81.57	54.96	71.48	47.97	88.55	65.84
November	75.11	43.37	78.09	43.60	57.80	36.39	67.91	43.56
December	56.68	45.16	50.58	42.45	83.44	35.46	81.99	56.79

\*Compiled from figures in *Engineering News*.

TABLE V. GROSS REVENUES OF STEAM ROADS—UNITED STATES\*

Month	1914		1913	
	Amount	Per cent of June	Amount	Per cent of June
June	\$230,751,850	100.00	\$241,107,727	100.00
July	252,231,248	109.31	261,803,011	108.58
August	269,593,446	116.83	280,919,858	116.51
September	272,992,901	118.31	285,850,745	118.56
October	269,325,262	116.72	298,066,118	123.62
November	240,235,841	104.11	272,882,181	113.18
December	231,253,367	100.22	256,869,730	106.54
Total	\$1,766,383,915		\$1,897,499,370	

\*Compiled from figures in *Commercial & Financial Chronicle*.

It is of interest to note in connection with the diagrams that for the steam roads, the earnings during July, August and September bear very closely the same relation to June in 1914 as in 1913. This shows that these roads felt the effects of the acute disturbances of the past summer first in October. Building operations first showed a material variation in the percentage of June during the month of September, while the amount of bank clearings, a highly sensitive barometer, showed a sharp drop in the first month following the beginning of the European war. By far the smallest fluctuation from month to month, both in 1913 and in 1914, is shown by electric railway earnings. In addition, the electric railway earnings for 1914 show a smaller variation from those in 1913 than is indicated in the other items assembled for comparison, although it does not follow that this small decrease in gross below 1913 indicates a relatively small decrease in net, because the electric railway business is conducted on a margin very much smaller than that of most commercial enterprises.

The accompanying tables are presented as of general interest.

## President Harmer on Springfield (Mass.) Electrolysis Report

### A Brief Analysis of the Bureau of Standards' Recent Report. Together with the Attitude of the Railway Toward It

President J. T. Harmer of the Springfield (Mass.) Street Railway has announced that the Stone & Webster Engineering Corporation, Boston, Mass., has been engaged to make a thorough study of the electrolysis report recently completed by the bureau of standards, with recommendations as to future power developments. The report was in three parts, as below:

Part 1 discussed test data obtained in the survey, stating that the over-all potential measurements are too high and that they should average for a twenty-four-hour period not over 3 or 4 volts, the potential gradient not exceeding 0.3 volt per thousand feet of track. Small differences of potential between pipes and track and between lead sheaths and other underground structures were found, with small currents in water and gas mains. None of the data shows any damage to underground structures, although there was a small voltage drop around the insulated joint in the 30-in. Little River water main. The report stated that "in general conditions at present cannot be regarded as alarming nor calling for hasty or precipitate action."

Part 2 contained a general discussion of electrolysis mitigation, based on the data given in Part 1. It appears, said Mr. Harmer, to favor insulated joints in water and gas pipes after other precautions have been taken, and it objects strongly to pipe drainage. As a remedy, a four-substation layout is recommended, such that the average twenty-four-hour potential gradient shall not exceed 0.45 volt per thousand feet of track. Mr. Harmer points out that owing to the lack of experience in this country with railway installations in which voltage drops in the negative return have been maintained low enough to give substantial freedom from electrolysis troubles, the bureau has based its conclusions largely on the standards laid down in England and Germany. The company feels that these conclusions should be given independent expert engineering study.

Part 3 outlined four possible methods of eliminating electrolysis difficulties in Springfield. The first provided that the railway company enter into an arrangement with the Turners Falls hydroelectric power interests, whereby the latter would take over the Margaret Street steam plant of the railway in Springfield at its present cash value and enter into a contract whereby the power company would supply power from substations to be built and operated by the railway company, three in the city of Springfield and one in West Springfield. The bureau concluded that this plan is the most advantageous. As one alternative the bureau recommended the installation by the street railway of additional negative return feeders without any change in the present distribution system, involving the expenditure of several hundred thousand dollars with little direct benefit to the company. Another involved the remodeling of the Margaret Street power station from a d.c. to an a.c. generating plant, the substations to be erected by the railway. This would cost more than the first plan. A third alternative was the installation of one substation



in Springfield and one in West Springfield, using the Margaret Street plant, operated by the hydroelectric company as a combined a.c. plant and substation, to supply the remainder of the load. This plan also would be more expensive than the first.

President Harmer points out that the Margaret Street station is well equipped and produces power at a satisfactory cost, and with purchases of power now being made from other companies efficiently fills the present requirements. For some time, however, it has been recognized by the company that with future expansion some changes might be necessary in the system of power distribution, and various studies have been made, but lack of funds has prevented any action. Mr. Harmer states that it cannot be expected that the street railway company would or could, without the best advice, abandon a plant valued by the city at \$700,000, and states that the estimate by the bureau of standards as to the price to be paid by the purchaser might not be satisfactory either to the railway company or the purchaser. As the property is covered by the street railway company's mortgage, a sale would not appear to be such a simple matter as might be inferred from the report, although eventually it might be found the proper course to pursue.

Prior to the investigation by the bureau, the company was discussing negotiations and proposed methods of power utilization with the Turners Falls company, but these were suspended when it became evident that the bureau would go beyond a mere statement of conditions. Mr. Harmer says that when the engagement of the bureau of standards was contemplated, the railway company declined to share in the expense because it had previously expended a large amount of money in examining and rebonding tracks, and any suggestions involving expense would fall most heavily upon it. Every facility, however, was afforded the representatives of the bureau in its investigation.

## Insulation for Railway Motors

### Westinghouse Designer Analyzes Materials and Methods Used in Armature and Field Coil Insulation

In the current issue of the *Electric Journal* R. E. Hellmund discusses the characteristics desirable in insulating materials for railway motors, briefly describes the materials now available and explains how these materials are selected and applied. As desirable properties he mentioned ability to stand mechanical stresses and vibration without cracking or chafing; flexibility and strength to withstand bending and pounding during manufacture or repair; freedom from deterioration under high temperature to the extent of losing mechanical and insulating qualities; non-shrinking character on application of heat or mechanical stress; compactness; moisture proofness; high dielectric strength; smoothness of surface, and low cost. No insulating material possesses all of these desirable qualities and the best that can be done is a compromise.

Available insulating materials are divided into two classes; first, mineral materials like mica and asbestos which withstand comparatively high temperatures and, second, fibrous materials like cotton, paper, linen, etc., which will withstand only comparatively low temperatures. Unfortunately the materials of the first class are lacking in some respects. Mica, for instance, if subjected to chafing will pulverize, and it is practically impossible to apply it anywhere in its natural form except in flat sheets. It is also very expensive. As a result pure mica can practically be used only as an insulation between the segments of commutators, and even here its use has been practically abandoned because the

natural mica is rarely found in sufficiently large plates of uniform quality. Pure asbestos is practically unavailable for use in railway motors in the small thicknesses required. The best substitute for pure mica and asbestos are materials consisting principally of them with certain supporting or binding materials.

Built-up mica, consisting of small, thin pieces held together by shellac, is used to good advantage for insulation between commutator segments, but care must be taken that the minimum amount of shellac is used, otherwise the material is liable to shrink under pressure and heat. Flat sheets of built-up mica are used also between layers of field coils, and, since the small pieces of mica used are flexible in themselves, it is possible to build up various shapes such, for instance, as the V-ring for commutators.

In applying mica to coils or heavy strap conductors it is necessary also to use some fibrous material like paper or cotton as a base for the mica. It is customary to build up mica on thin sheets of fish paper or Japanese paper, and to wrap the resultant sheet around the straight parts of the armature coils or heavy conductors. It is also customary to build up mica on a thin cotton tape and to use the resultant material for taping coils or heavy conductors. If the amount of paper or tape is small and if the material is applied in such a location, as in an armature slot, so that the mica will remain intact even after the paper or the cotton tape has deteriorated, these materials may be expected to withstand fairly high temperatures. In all of these applications the built-up mica fulfils the requirements except that it is expensive and it is liable to pulverize under vibration.

Asbestos insulation can be applied to wires and small straps with the use of binding materials, but in all these cases, except in that of asbestos tape which can readily be used in taping armature or field coils, the mechanical qualities of these insulations are still quite poor. It is, for instance, very difficult to wind an armature with asbestos-covered wire without injuring the insulation, and while an armature wound with this wire will be less subject to roasting than one wound with cotton-covered wire, it is doubtful whether there is any real gain because of the frequent breakdown caused by the mechanical injuries sustained during winding. Asbestos windings also require much space if used in sufficient thickness, they are not in themselves moisture-proof, they have very low dielectric strength, they do not give a smooth surface, and they are expensive.

Fibrous materials, while they do not withstand high temperature, are advantageous in a good many other respects and are extensively used in railway motors. Cotton insulation is, after all, the only one which can be applied satisfactorily to small conductors such as the wire used in railway motor armatures. Paper products of the various types manufactured for insulating purposes, while not withstanding very high temperatures, serve many good purposes in the insulation of railway motors. Fuller board also is used to advantage in many places.

The impregnating of fibrous and asbestos products with varnishes, gums, bakelite, etc., produces several results: First, the treating materials fill up the pores of the basic material and eliminate moisture; second, the dielectric strength is increased even where there is no moisture to be considered; third, most treating materials assist in producing smooth surfaces; fourth, the heat resistance quality of the basic material is often increased, and, fifth, the filling up of the pores may in certain cases reduce the tendency to shrink. Incidentally the treating materials increase the heat conductivity of the insulation resulting in less difference of temperature between the conductors and the outside.



## Syndicated Anti-Railway News

### Continuation of Adverse Bulletins—The "Jitneys" Are Now Being Boomed

In an article in the last issue of this paper an account was given of a newspaper syndicate association which suggested to newspaper editors that they start a war on "rotten car service." The offer was made to sell a service of "canned" agitation, and reproductions were published of one of the bulletins sent out advocating an anti-trolley campaign and of two bulletins setting forth the superiority of "jitney" transportation over the electric railway service.

A number of recent bulletins of the same kind of syndicated anti-railway news, issued in form for use by daily papers, have reached the office of this paper. Most of them relate to the "jitney" movement. Several typical ones are published, in part, below. The first is the introductory part of some "special correspondence" from Houston, Tex., and reads as follows:

(Special Correspondence)

HOUSTON, TEX., Feb. 00.—You can't find a straphanger in Houston to-day with a spyglass. A year ago there were more than 20,000 straphangers daily. But nowadays those 20,000 people are paying their nickels to the "jitney" buses—and are riding to and from work in comfortable, cushioned seats, with fresh air filling their lungs and only half the time spent on the trip.

"We've solved the transportation problem," says Steve McCormick, the pioneer Houston "jitney" driver. "My cars are each paying me from \$7.50 to \$10 over all expenses, and a depreciation charge." McCormick figures that a Ford will last a year or more in the business. "The 'jitney' business is a regular epidemic in America," he says.

Another "Special Correspondence" from Baltimore begins as follows:

#### "JITNEYS" MARCH FROM COAST TO COAST.

GIRL RUNS FIRST MOSQUITO FLEET IN BALTIMORE; WASHINGTON SOON TO HAVE "JITNEYS" TOO

(Special Correspondence)

BALTIMORE, MD., Feb. 00.—The "jitneys" have invaded the East. The first "jitney" bus on the Atlantic Coast began operating in Baltimore a week ago.

And, as usual, it was a woman who started things. Miss Sarah Henderson, who has been nicknamed, "The Jitney Girl," started the first bus, running from the eastern edge of the city to the City Hall, a distance of twenty-five city blocks. On her first run "The Jitney Girl" cut the time of the trolley line in half. Two buses were put into operation to start the line, and seven passengers constituted the first load, all riding to the City Hall.

In each case the same animus against the local electric railway industry is shown. This is the way the Toledo situation is described, in part:

#### "JITNEYS" THREATEN RUIN OF TOLEDO TRACTION TRUST!

FEDERAL "TWO-LEGGED" JUDGE CAN'T FINE 'EM AS HE DID NEWSPAPER WHICH ATTACKED STREET RAILWAY MONOPOLY!

TOLEDO, OHIO, Feb. 00.—So strong is the "jitney" bus idea with Toledo people that the city council is already considering a bond issue to establish a municipally-owned and operated system of the popular vehicles. This, although the city last summer voted for municipal ownership of the street car system and an \$8,000,000 bond issue to that end is now pending.

Just when the franchises had expired and the people of Toledo believed that a fair settlement might be reached with the company, the corporation took refuge in the United States Court. The City Council has passed an ordinance requiring the company in consideration of operating without a franchise to accept a 3-cent fare. The company adopted the policy of refusing the 3 cents but carrying the passenger free. This lasted from March until September last. The people felt that the company was being forced toward a

proposition by the city of a franchise that would give a fair return on actual investment.

Then Judge John M. Killits in federal court granted an injunction restraining the city from enforcing the 3-cent ordinance as a rental for its streets.

There was general public criticism of this action. Judge Killits haled in the business agent of the Central Labor Union, The Toledo *News-Bee* and its editor, N. D. Cochran, and one or two others on charges of contempt of court. He tried the cases himself, found the defendants guilty, roundly rebuked the labor leader, fined the *News-Bee* and its editor \$7,700. The only defense made by the defendants was that they had the right to discuss publicly matters of public interest if they did not exceed the bounds of truth and good citizenship.

That was probably the final blow to the company's chances of a franchise. That and the wretched service especially at busy hours explain the popularity of the "jitney" bus and its active support by the people.

The following is still another example of the same kind of newspaper bulletin sent broadcast to the daily papers for publication as original matter.

#### MOVIE TOWN OUSTS TROLLEY FOR "JITNEYS"

Universal City, the only moving picture municipality in the world, is going to oust the trolley system entirely. The town solons have decided to establish a "jitney" bus line from the entrance to the city, down Lankershim Boulevard and thence east along the Laemmle Boulevard to the eastern suburbs of the town.

The new "jitney" bus line will thus connect the zoo and ranch houses with the city itself, centering around the administration buildings. The advent of the "jitney" bus on the Pacific Coast threatens to oust the trolley system entirely.

## Abstracts of Electric Railway Reports

The Public Service Commission for the Second District of New York recently issued Volumes I and II of its report for the year ended Dec. 31, 1913. The first volume contains the cases and orders, but the second is devoted to abstracts of corporation reports for steam railroads, electric railways, express companies and sleeping-car companies. The section for electric railways contains a statement of the organization of such companies as of June 30, 1913, and their mileage. Tables are also presented showing the cost of road and equipment, funded debt, funded debt issued or assumed, capital stock, location and length of road operated, classification of mileage within New York, car equipment, operating revenues, operating expenses, operating statistics, employees with salaries and wages, accidents, and principal officers and offices. Such tables are in the main for both operating and lessor companies. Supplemental sections present data in regard to inchoate and dormant electric railways and also to changes in the corporate organizations of electric railways during the year.

## Valuation Conference in Washington

A valuation conference has been called to be held in Washington, beginning March 22. The division of valuation of the Interstate Commerce Commission has virtually completed its appraisals of a number of railroads. In the prosecution of this work many questions have come up which the commission believes can be answered at a hearing in which the carriers, as well as representatives of the state commissions, will have an opportunity to take part. Among the questions to be considered are how depreciation shall be determined, whether by mortality tables or actual observation or by a combination of these two methods; whether obsolescence and inadequacy shall be considered and whether an allowance will be made for appreciation; what overhead charges shall be allowed and how shall the time necessary to reproduce the property be determined.



ANNUAL CONVENTION  
SAN FRANCISCO  
OCTOBER 4 TO 8, 1915

# American Association News

ANNUAL CONVENTION  
SAN FRANCISCO  
OCTOBER 4 TO 8, 1915

Manufacturers Association Announces Reduction in Dues—Biographical Sketches of Officers of Manila Section, Completing the Series Are Given—Other Activities Are Reported

## POWER DISTRIBUTION COMMITTEE

The sub-committee on materials for 600-volt trolley construction met in the association rooms on Feb. 25 and 26. Those present were A. S. Richey, Worcester, Mass., chairman of the main committee, and C. L. Cadle, Rochester, N. Y.; C. F. Woods, Boston, Mass., and C. R. Harte, New Haven, Conn., of the sub-committee.

After completing work on the "general clauses," "wrought iron and mild steel," "malleable castings" and "wood cross-arms" specifications were carefully considered and put in tentative shape with the understanding that the chairman of the sub-committee, Mr. Harte, will take up certain details with manufacturers. The sub-committee will meet again on April 1.

## OFFICERS OF THE MANILA ELECTRIC RAILROAD & LIGHT COMPANY SECTION

At the organization meeting of the section held on Dec. 15, Oscar Keesee, superintendent of transportation, was elected president and Walter E. Smith, purchasing agent, secretary. Brief biographical sketches follow.

Mr. Keesee has occupied his present position since 1910 after a year's experience as assistant superintendent. He was born in Hillsboro, Texas, in 1876 and attended the local public schools and Baylor University until 1895. After occupying sundry positions he en-



OSCAR KEESSEE



WALTER A. SMITH

listed, in 1898, in the Third Texas Volunteer Infantry, holding successively the ranks of private, corporal and sergeant. In 1899 he enlisted in the Thirty-third United States Volunteer Infantry and served successively as private, corporal, first sergeant and sergeant-major, leaving the service in 1901 to enter the Manila Police Department, where he served first as patrolman, then as roundsman, and finally as sergeant. He left this work in 1909 to join the staff of the Manila Electric Railroad & Light Company.

Mr. Smith has occupied his present position since 1912. He was born in Ponca, Neb., in 1880 and subsequently moved to South Dakota where he attended the public schools. His practical work began in 1896 in railroad construction and after two years of this he spent a year in Ward's Academy. He enlisted in 1899 in the Thirty-fifth United States Volunteers for service in the Philippines and was discharged by special order in 1901 to permit him to become a member of the semi-military police organization of Manila. In 1905 he joined the construction staff of J. G. White & Company,

leaving this in 1905 to join the operating company at the beginning of operation of the Manila Electric Railroad & Light Company. In 1906, after a vacation in the United States, he returned to the Islands and entered the service of the Philippine Railway Company remaining with it for two years. After this, until 1912, he was employed with the Insular purchasing agent.

## MANUFACTURERS' ASSOCIATION NOTES

The executive committee of the Manufacturers' Association has decided, in view of the fact that there will be no exhibition in connection with the 1915 convention and because of the adverse business conditions, to reduce the annual dues for 1915 from \$30 to \$10. The initiation fee will remain at \$15.

The association will keep up its active work in the interest of its members for, in spite of the omission of the exhibition this year, there are many things which the association does for its members. Plans are under way for the formulation of a campaign of publicity for those of the member companies which will have permanent exhibits at the Panama-Pacific Exposition; and the interests of the non-exhibiting members will not be neglected.

The association is in touch with the bureau of foreign and domestic commerce of the Department of Commerce and also with the Chamber of Commerce of the United States and through these sources is planning to keep its members informed as to foreign trade opportunities.

Transportation arrangements for the 1915 convention are gradually assuming shape. The transportation committee is planning to send at least four special trains to the convention, three of them originating on the Atlantic Coast.

H. G. McConnaughy, director of transportation, has in preparation the train itineraries. The equipment for these trains has already been secured, and the association is assured of the finest specials that will go to San Francisco. It is the intention of the committee to give the delegates every comfort and luxury and to arrange for a trip which will permit of visits to all the important points of interest between Chicago and the coast.

As soon as the details of the trip are worked out the committee will make an announcement to the members. In the meantime, it can be safely assumed that nothing will be omitted to make the visit to San Francisco one of the most interesting and enjoyable events in the long history of the two associations. Mr. McConnaughy is starting for the coast, as this issue of the ELECTRIC RAILWAY JOURNAL goes to press, for the purpose of arranging many of the details of the trip in person.

## PUBLIC SERVICE SECTION

An extra meeting of Section No. 2 was held in Camden, N. J., on March 11 for the convenience of the employees in the southern part of the State. President P. F. Maguire presided and Secretary A. T. Warner also attended. The fundamental parts of the papers by L. D. H. Gilmour and H. C. Donecker, described in the issues of the ELECTRIC RAILWAY JOURNAL for Feb. 20 and Feb. 27, were repeated. While the meetings regularly scheduled for the third Thursday of each month will continue to be held in Newark, at company headquarters, the officers plan to diffuse the benefits thereof throughout the entire system.



## COMMUNICATIONS

### Maximum Motor Input

NORTH-SOUTH HOLLAND TRAMWAY COMPANY  
HAARLEM, HOLLAND, Feb. 8, 1915.

To the Editors:

Referring to the discussion on maximum motor input in your issue of Dec. 19, it will be perhaps of interest to your readers to know that for a direct-current line of 1200 volts which I built in 1910 the following specification was prescribed for the motors:

"After testing the motors with their normal current at one hour rating, they have to be subjected to double this current for five minutes, without flashing or injurious sparking. Furthermore, the motors will be overcharged to a greater extent, to get some information on the sparking at greater overloads."

The motors were of 30 and 80 brake-hp rating for one hour, and were built without any objection by the Siemens-Schuckert Works of Berlin, the Bergmann Electricity Works of Berlin, Brown, Boveri & Company of Baden (Switzerland) and the Electrotechnical Industry of Dikerveer (Holland). They have stood these tests in every respect.

H. J. MULDER,  
Electrical Engineer.

### The Company Section Movement

WASHINGTON RAILWAY & ELECTRIC COMPANY  
WASHINGTON, D. C., March 6, 1915.

To the Editors:

I have been interested in the editorial discussion in the columns of the *ELECTRIC RAILWAY JOURNAL* on the company sections of the American Electric Railway Association. The following remarks are based on practical experience in the movement and will, I hope, be suggestive to members of present and prospective sections.

"Company sections" mean another forward impetus to the electric railway industry. We feel it and know it, but can we prove it? Can we set forth facts and arguments in sufficient strength to induce electric railway men in all departments of the industry to join the movement, to become live factors in promoting the reasons for its organization? We must have firm ground to stand on; if we hesitate when we are asked "What benefits do you get from the section?" or "Why should I join the section?" and cannot prove our claims for the movement, then the movement is lost.

The growth of the sections has been rather slow, due no doubt in a great measure to lack of proper tools with which to work. Let us "get busy" and put that vital force into our arguments which will not only get members for our movement but keep them members—and live ones.

We must first be interested and attracted by the meetings of the section; we must have live talks on live railway subjects by live railway men; talks straight from the shoulder. Perhaps the association could arrange an interchange of prominent speakers for meetings of the sections; men who know and whom others would consider it a privilege to hear. Of course, we always have home talent which can discuss local conditions, of interest to those who have their company's welfare at heart.

We must let the members get the benefit of free discussion, making them rely on themselves so they can speak in public both fluently and forcibly.

We must make our meetings attractive in other ways, educationally and socially, by securing good speakers and motion pictures, slides, etc., on subjects of current interest and by utilizing local talent in the line of instrumental and vocal music. We can offer prizes for

the best papers on selected subjects, which will encourage employees to express their thoughts.

To conclude, we must first convince ourselves that we are reaping benefits from the company section movement. With that accomplished, the movement will grow rapidly and irresistibly. Let us "start something"; bring forth our arguments in these columns "why we are existing." Let us tell the other railway managers and employees "what they are passing up," and they will become interested, ask for details and finally start new sections.

GEORGE G. WHITNEY,  
President, Company Section No. 4.

### Filing of Technical Literature

NEW HAVEN, CONN., March 6, 1915.

To the Editors:

I have followed the discussion on the filing of technical data which was carried on in the columns of the *ELECTRIC RAILWAY JOURNAL* a short time ago. Your readers might be interested in another contribution on the same subject.

Years ago the writer was engaged in construction and operating work and the need for a classification of technical information was not so apparent. In recent years in consulting engineering work, however, the situation would often arise where information covering some specific point was wanted and wanted immediately. Usually what would happen would be that I remembered having some six months or a year before seen the precise information now needed, but for the life of me I could not remember just when or where I had seen it. In other words, it was lost, covered up by the mass of technical information which every engineer is forced to at least run his eye over during the course of a year.

I have always been most closely connected with work relating to the electrification of steam railroads. In order to cover this subject I some time ago arranged to classify all information received, either in the course of daily work, or from the technical press, in such a manner that any item would be quickly available. For this purpose I divided the subject of electrification into nine main divisions and a number of sub-divisions which has gradually grown to about 160. All matter relating to any one sub-division is dropped into a stiff cardboard folder suitably numbered and designated. The main divisions follow the natural divisions of electrification work. For instance, all electrifications must have a source of power. The subject "Power Stations" is then numbered "1" and forms the first main division. In the same way other natural main divisions are "Primary Transmission Systems," "Sub-stations," "Rolling Stock," etc. Anything relating to power stations, therefore, takes the prefix "1"; anything relating to primary transmission systems takes the prefix "2"; rolling stock data takes the prefix "6", etc.

Coming now to the sub-divisions under these main divisions, the main subject "Power Stations" is subdivided into such items as "Capital Costs," "Land and Buildings," "Boiler-room Equipment," "Engine-room Equipment," "Auxiliaries," "Coal Consumption," "Operation and Maintenance," "Cost of Manufacturing Electricity," etc. Each of these sub-divisions has a separate folder and the appropriate prefix "1.1", "1.2", etc. By the use of the decimal system for numbering the folders, the sub-dividing can be carried as far as may be desired.

In order to cover a large number of subjects which cannot properly be classified under any of the natural divisions of electrification, I have formed what is called a "general" main division, which takes the prefix "O," and contains such subjects as circuit breakers, which are used in power stations, in substations, on line construc-



tion and on rolling stock. The same is true of insulation or lightning protection. Data relating to insulation, lightning protection, or to the cost or capacity of circuit breakers are therefore classified by themselves under the general main division. A list both of the main divisions and of sample sub-divisions is given below.

While the arrangement shown is entirely an arbitrary one, adapted merely to the writer's personal interest in the subject of electrification, the same general principle can be applied to any branch of engineering. In fact, one of my friends, a professor at one of the large universities whose general subject is "transportation," has grouped and numbered this subject in the above manner, using more than 1000 sub-divisions.

The danger in any classification system of this kind is that it may become top-heavy or unwieldy, or, after a time will contain much matter that is obsolete. It is necessary therefore constantly to be weeding out and conveying to the scrap basket data which have been replaced by more accurate or up-to-date information or which for any other reason have become obsolete. By so doing one can keep this portion of his engineering tools clean and bright and ready for any emergency. In practice the system outlined above has worked out surprisingly well; requiring very little outlay of time to maintain it in good workable condition. If at any time it becomes necessary to investigate some specific subject, such as "freight-yard electrification" or "train resistance," etc., one's store of information is ready for instant use.

WILLIAM ARTHUR, Assistant Engineer,  
With McHenry & Murray, Engineers.

[NOTE. The sample lists referred to by Mr. Arthur are given in part below.—EDS.]

#### MAIN DIVISIONS UNDER STEAM RAILWAY ELECTRIFICATION

(0) General; (1) Power Stations; (2) Primary Transmission Systems; (3) Substations; (4) Secondary Distribution; (5) Track Circuits; (6) Rolling Stock; (7) Miscellaneous; (8) Description of Complete Electrification.

#### SUBDIVISIONS UNDER GENERAL TOPIC "0"

(0.0) Indexes; (0.1) Lightning Protection; (0.2) Section Switches; (0.3) Circuit Breakers; (0.4) Switchboards and Switches; (0.5) Insulation; (0.6) Efficiencies, General; (0.7) Electrolysis; (8) Electro-Magnetic Disturbances; (0.9) Signals and Signaling; (0.10) Mountain Grades; (0.11) Training of Motormen and Others; (0.12) Freight Yard Electrical Operation; (0.13) Constants for Single-Phase Circuits; (0.14) Spare; (0.15) Miscellaneous—General; (0.16) Terminals; (0.17) Capital Costs—General; (0.18) Personal; (0.19) Crossing Right-of-Way with Wires; (0.20) Comparison of Systems; (0.21) Power Distribution Calculations; (0.22) Depreciation and Obsolescence; (0.23) General Progress; (0.24) Photographs; (0.25) Ratings; (0.26) Lighting, and so on.

#### SUBDIVISIONS UNDER ROLLING STOCK "6"

(6.1) Capital Costs; (6.2) Traction Mechanics; (6.3) Gears and Gear Ratios; (6.4) Motor Types and Characteristics; (6.5) Speed Time Curves and Data; (6.6) Acceleration and Retardation; (6.7) Energy Consumption; (6.8) Weights; (6.9) Train Resistance; (6.10) Operation and Maintenance; (6.11) Control System Data; (6.12) Brakes and Braking; (6.13) Heating of Trains; (6.14) Spare; (6.15) Single-Phase Rolling Stock Data; (6.16) D.C. Rolling Stock Data; (6.17) Three-Phase Rolling Stock Data; (6.18) Split-Phase Rolling Stock Data; (6.19) Mercury Rectifier Rolling

Stock Data; (6.20) Permutator Rolling Stock Data; (6.21) Self-Propelled Rolling Stock Data; (6.22) Steam Locomotives; (6.31) Repair Shed Data; (6.32) Draught and Coupling Gear; (6.33) Mileage Statistics; (6.34) Regeneration; (6.35) Failure Notes; (6.36) Miscellaneous Data; (6.37) Clearances; (6.38) Amount of Rolling Stock; (6.39) Current Collection; (6.40) Brushes and Brush-Holders; (6.41) Forced Ventilation; (6.42) Design of Rolling Stock; (6.43) Spare; (6.50) Descriptions of.

### Engineering Considerations in a Proposed Line

ZELIENOPLE, PA., March 6, 1915.

To the Editors:

It is proposed to build a double-track road 150 miles long to connect two cities of 50,000 and 300,000 population respectively and traversing a good agricultural country. I should like to hear from some of your many readers on the following questions: Would you recommend a standard gage and why? Would you use steam, electric or gasoline power and why? What size units would you recommend? Single cars, or motor cars and trailer or electric engine and train? Would you recommend single cars and frequent service or large trains and less frequent service? Would you advise the treatment of ties before placing in track? If so, what treatment?

AN INTERESTED READER.

[NOTE.—Standard gage should certainly be used whether the motive power is to be steam, gasoline or electricity. Narrow gage is warranted only on lines of very light traffic where the topographical conditions are such that the expense of standard gage would be very much greater than that of narrow gage. In the case under consideration this exceptional condition undoubtedly does not occur. It is impossible from the data submitted by our correspondent to advise him as to the proper motive power to use or the extent of the service. It might not pay even to build the road at all.

The proper plan to follow is first to make a study of the probable traffic on the proposed line. The traffic would vary with the population of the intervening country, the community of interest between this population and the terminal cities and between the terminal cities themselves, the extent and character of competing means of communication, etc. The probable traffic, which could be calculated fairly closely by a study of all of these factors, would determine the best schedule, or headway between trains. If the schedule calls for ten trains or cars each way a day or more, as is presumably the case with a double-track line, the chances are that electricity would be the most desirable motive power. With fewer than ten trains a day and little prospect for much early future growth, some system of independent motive power would naturally be considered. Probably gasoline would be best if the traffic was largely passenger, calling for a frequent service, and steam if it was mostly freight and could be carried in a small number of long trains. Of course, if the road was a part of a large steam railroad system, steam would have the added advantage of introducing no change of motive power at the junction of this road and the rest of the system. Before making a definite decision, however, most engineers would make careful estimates of the initial cost, operating expenses of the different motive powers and probable future of the road, especially if the case was near the border line of a choice of powers.

Tie treatment is recommended, as with exposed track the conditions are favorable to rot. The most common method of treatment is by creosote, using either the open or full-cell process.—EDS.]



# Equipment and Its Maintenance

Short Descriptions of Labor, Mechanical and Electrical Practices in Every Department of Electric Railroading

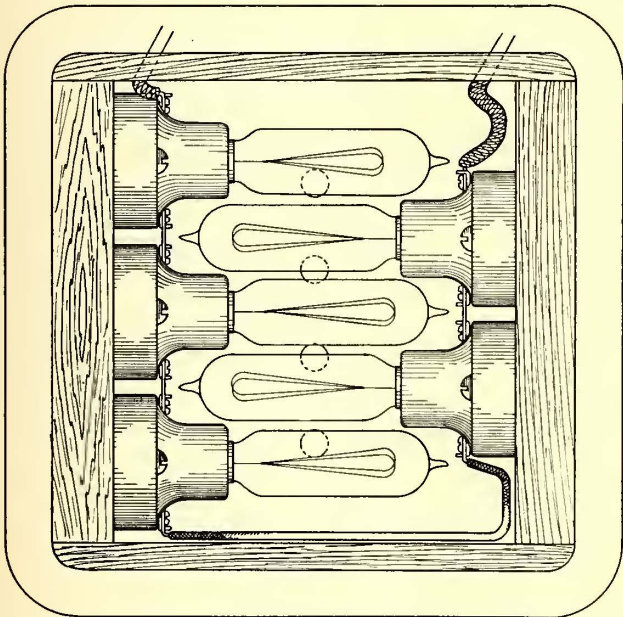
(Contributions from the Men in the Field Are Solicited and Will be Paid for at Special Rates.)

## Portable Lamp Bank for Equipment Tests

BY F. L. HINMAN, MASTER MECHANIC NEW YORK STATE RAILWAYS—SYRACUSE AND ONEIDA LINES

A very convenient device for quickly locating trouble in connection with electric equipment, such as open circuits, grounds, etc., is a portable lamp bank which is small enough to be contained in the inspector's ordinary tool kit and so constructed that it will not be damaged by rough handling.

A portable bank of this kind, which has given excellent results thus far, has been in use on our lines for some time. It includes a whitewood frame 2 in. deep, measuring  $4\frac{1}{2}$  in. x  $5\frac{1}{4}$  in. inside. Two sides of this



SKETCH OF PORTABLE LAMP BANK WITH COVER REMOVED

### MATERIALS REQUIRED

- 2 pieces  $11/16$ -in. x  $1\frac{1}{8}$ -in. x  $3\frac{3}{8}$ -in. whitewood.
- 2 pieces  $5/16$  in. x  $1\frac{1}{8}$ -in. x 6-in. whitewood.
- 2 pieces  $3/16$ -in. x 7-in. x 7-in. agasote.
- 5 No. 675 candelabra receptacles.
- 5 8-cp, 130-volt candelabra base lamps.
- 50 ft. No. 16 flexible S-B. R. C. wire.
- 10 No. 8 R. H. brass screws.
- 12  $5/8$ -in. No. 5 R. H. brass screws.

frame are made of whitewood  $\frac{3}{4}$  in. thick, upon which are mounted five No. 675 candelabra receptacles connected in series and each containing a 130-volt lamp. The mounting of the lamps should be as shown on the sketch in order to occupy as little space as possible.

Two lead wires, one 15 ft. and one 35 ft. long, made of No. 16 flexible wire are attached to the terminals and brought out through a hole in the frame. Two covers 7 in. x 7 in. made of  $3/16$  in. agasote are screwed on to the frame in such a manner as to provide a groove  $\frac{1}{2}$  in. deep and 2 in. wide around the outside in which the leads can be wound.

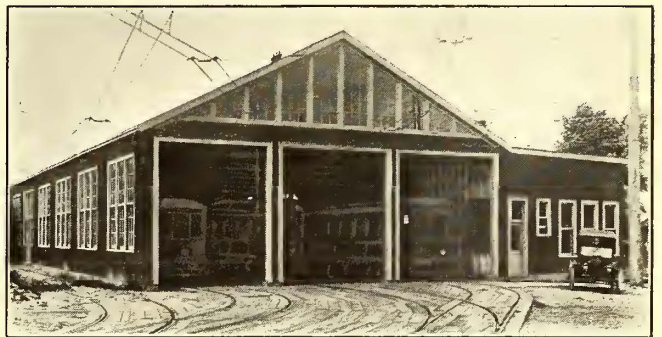
Four  $\frac{3}{8}$ -in. holes are bored in each cover to provide ventilation and to enable the operator to see the light, although the arc drawn by the bank is sufficient to indicate to the operator the condition existing.

In using this device, if it is desired to test for grounds, the short end may be hooked to the line terminal of the circuit breaker. Grounded armatures, fields or controller cylinders can be quickly located by opening the controller and testing to the proper fingers.

## Carhouse of Seattle Municipal Railway

BY H. J. KENNEDY, ELECTRICAL AND MECHANICAL ENGINEER

The carhouse of the Seattle Municipal Railway, although a temporary structure, is substantial of its kind, being of heavy frame construction with concrete foundations and pits. It is sheathed with corrugated iron. An illustration shows the front on Third Avenue West. The building is wide enough to contain three tracks, and a fourth track intended for washing cars and for storage is laid outside. The southernmost track under cover is used for inspection and storage purposes and has a pit at one end which is long enough for inspecting one car, and which is intended for extension when the building is extended. The two northerly tracks are repair tracks. The middle track



SEATTLE MUNICIPAL CARHOUSE—FRONT VIEW OF BUILDING

runs over a deep pit long enough for one car, in which is placed a wheel grinder. The pit under the northerly track is long enough for two cars. Adjoining it on the west is a very shallow pit in which men stand when working on the low maximum-traction trucks which are run out from under the car bodies to this portion of the track.

The floor of the deep repair pit, which shows in the foreground of the interior view, is 4 ft. 6 in. below the top of rail. That of the truck pit is 22 in. below top of rail, this being also the level of the floor in the shop building to the north of the carhouse. These floors are made continuous by means of a bench 41 in. wide along the northerly side of the deep pit, the edge of which just shows at the right of the interior view. Steps in the concrete at each end of the pits give access to them. However, a man in the deep pit can readily place a part or tool on the shop floor level, or climb to it himself without going to the steps. The arrangement for a shop restricted by such size limitations as is this one is very convenient.

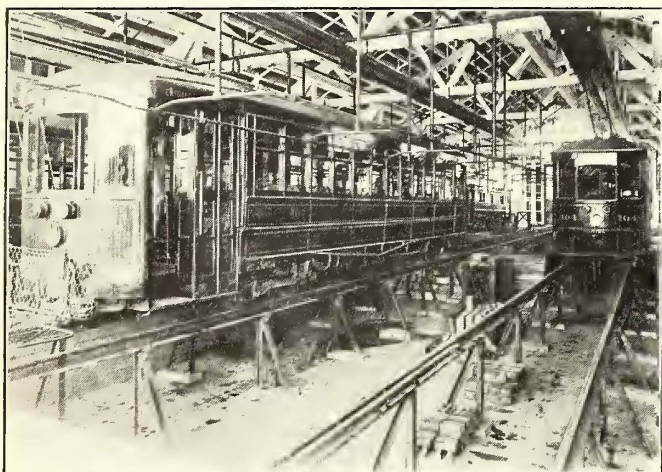
The rails over pits are 7-in., 80-lb., T-section, and they are supported by cast-iron rail chairs which are placed



at 8-ft. centers and are made of heights to suit the different pits. The chairs are embedded at their bases in the concrete footings, which are laid with a 1:2:4 mixture. The bulk of the repair work is done on the two northerly tracks, which are 16 ft. center to center and allow plenty of room for working on the cars. The roof trusses are heavy enough to support a car body, and four Yale & Towne 4-ton triplex chain blocks have been installed for lifting bodies off the trucks, enabling the latter to be run out to the truck pit.

On the northerly side of the carhouse are located the offices, machine shop, oil house and toilet wing. All these accommodations are on a small scale, as befits the small mileage. However, they are complete enough to include a trainmen's hall, in which are located seats, table and bulletin board for the trainmen, and a safe with chute door for conductor's turn-ins. There is also a main office with provisions for the operating man, station foreman or dispatcher, and a little office for the master mechanic opens off the shop, the latter having a floor 28 in. lower than the office floor. The south side of the shop opens into the carhouse, so that men and materials, car motors, etc., may readily pass from one to the other.

The oil-house floor is 18 in. below grade, and the tops



SEATTLE MUNICIPAL CARHOUSE—INTERIOR VIEW SHOWING SPRINKLERS AND PITS

of the concrete walls around it are 6 in. above grade. A drain connection with plug is provided in the concrete floor; thus the oil house is itself a concrete tank which can be drained if necessary, and a thorough scrubbing out is facilitated in case of accumulation of oil or grease on the floor. The engine oil used for car lubrication is stored in a Bowser steel oil tank of 120-gal. capacity, with self-measuring pump. Grease is stored in a barrel, and the small quantities of gasoline and kerosene used are at present stored in the cans in which they come. A wagon may be backed up to the oil-room side door and a barrel unloaded onto the track over the tank, rolled either into position over the tank, or to the opposite side of the oil room. Steps from outside give entrance to the end door of the oil room, which has no direct communication with any other room.

The automatic sprinkler system contains 280 sprinklers, of which 120 are in the aisle lines between the car tracks, at a height not over 2 in. below the top of glass in car windows. The remainder are under the roof and in the attached shop and office wings. Separate 6-in. dry-pipe valves are provided for these two branches of the system, being located in a lean-to valve house alongside the carhouse. Air pressure at 35 lb. to 40 lb. per square inch is maintained in the dry pipes by an elec-

trically-driven air compressor having a capacity of 11 cu. ft. per minute. The apparatus is the Globe automatic sprinkler equipment, made by the Sprinkler Company of America.

The lighting system installed in this carhouse is controlled by a semi-enclosed panelboard in the toilet room. One line in conduit is run on each of the seven roof trusses and each has four 100-watt Mazda lamps, located midway between adjacent tracks and between tracks and walls to north and south, respectively. Suitable receptacles are provided for extension cords of desired lengths.

In each pit a conduit is run along the bottom of each rail (being offset to pass around the rail chairs), and at each rail chair are placed alternately 16-cp lamps in wire cages and receptacles for extensions, staggered between the north and south sides of pit, so that at any rail chair a man under a car has a lamp on one side of him and a receptacle on the other. In consequence of the whiteness of the concrete walls and floor, this gives an excellent illumination under the cars, even without using extension cords.

Plans have been prepared for a separate building for the blacksmith shop, which is also intended to house the 3-cu. yd. "Viloco" sand dryer, with bins for coal, green sand, dry sand and smithing coal. The sand dryer, coal and sand bins extend, according to the plans, out under a driveway with trap doors into which wagons can discharge.

A car-wheel grinder of the Q. M. S. type has been purchased for installation in the deep pit in the middle track. The car wheels, while being ground, are turned by their own motor, special rheostats being connected in series with the latter to moderate the speed. For turning the pony wheels of the maximum traction trucks, a series of shafts connected by shifting spur gearing is provided, a removable split sprocket wheel being clamped on the car axle to enable it to be driven. The Department of Utilities in Seattle has been very rigid in enforcing the prohibition of flat wheels in the city, and to meet its desires this extra apparatus was designed. The iron columns of the machine are hollow and are connected by 6-in. pipe underground to an exhaust fan which removes the emery and iron dust from the grinding.

The engineering of location and construction of Division "A" of the Seattle Municipal Railway was under the direction of the Seattle Engineering Department, A. H. Dimock being city engineer. Division "C," however, was constructed by private capital and later taken over by the city, as already explained in the *ELECTRIC RAILWAY JOURNAL*. The author of this article, as electrical engineer, was in general charge of preparation and execution of specifications and designs, installation, etc., for pole lines, feeder and trolley lines, rolling stock, substation, carhouse and shops, etc. Architectural and drafting assistance on the buildings, and foremen, electricians, etc., were contributed from time to time by the building and lighting departments. The decision to use a double-trolley system was due to the Board of Public Works. When the initial mileage was completed, Division "A" was turned over for operation to the Department of Public Utilities, of which A. L. Valentine is superintendent.

In a recent investigation made by the Department of Health of Chicago, it was found that the heater capacity of some cars was approximately equivalent to that of the passengers when the car was completely loaded. The cars in question had a capacity with all heaters in full operation, of 27,000 B.t.u. per hour, while, when the car was carrying eighty passengers, the total heat given off by them was about 24,000 B.t.u. per hour.



## Chart for Use in Transforming Motor Speed Curves for Different Voltages\*

BY F. CASTIGLIONI, NEW YORK

It is often necessary to calculate the speeds at which a railway motor will run at one voltage when a speed-current curve for some other voltage is available. If the motor resistance is known this can be done, for any value of current, by means of the formula:

$$\frac{s_2}{s_1} = \frac{E_2 - Ir}{E_1 - Ir},$$

where  $s_1$  is the speed, from the curve corresponding to the voltage  $E_1$  and the current  $I$ , and  $s_2$  is the calculated speed corresponding to  $E_2$  and  $I$ . This formula simply states that the speed, for any value of current, is proportional to the counter-emf.

This formula can be used in plotting a chart like that

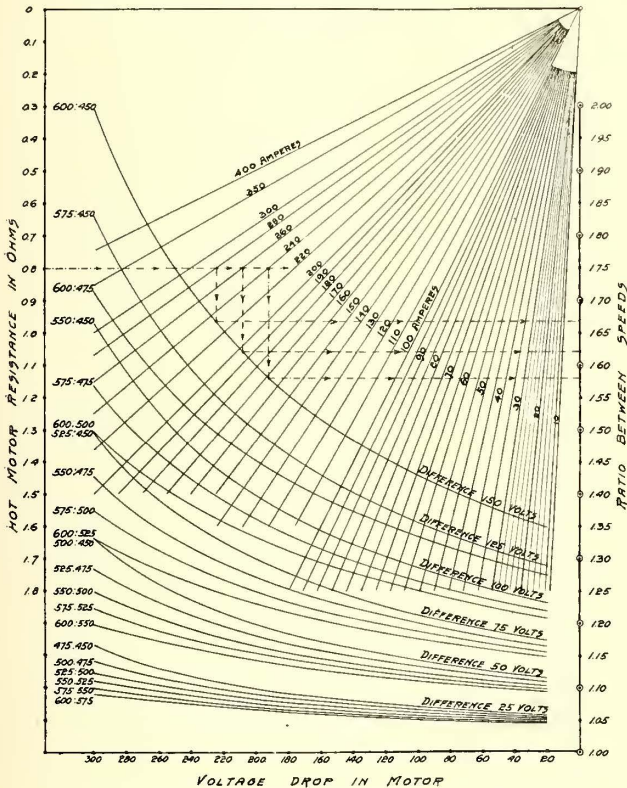


CHART FOR THE TRANSFORMATION OF THE SPEED CURVE OF RAILWAY MOTORS FOR DIFFERENT VOLTAGES

shown, by means of which the transformation can be made very quickly.

The chart consists of two parts: (1) a set of straight lines plotted between hot motor resistance and  $Ir$  drop for a large number of current values; (2) a set of curves plotted between  $Ir$  drop and the speed ratio  $s_2/s_1$  or  $(E_2 - Ir) \div (E_1 - Ir)$ , for a variety of voltage ranges liable to be encountered in every-day work. As there is a definite  $Ir$  drop corresponding to each value of  $I$  and a definite speed ratio corresponding to each set of values of  $E_1$ ,  $E_2$  and  $I$ , the speed ratio can be quickly calculated from the charts as follows:

### USE OF THE CHARTS

To determine the speed ratio for, say, a voltage change from 600 to 450 volts at a current value of 280 amp for a motor having a hot resistance of 0.8 ohm, we begin at the 0.8-ohm point on the hot resistance scale at the left and project to the right to the intersection with the

280-amp line. We then project vertically downward to the intersection with the speed-ratio curve and read off the desired speed ratio.

A current-speed curve can be quickly transformed by continuing the horizontal hot-resistance line to intersect a number of the current lines and projecting downward and to the right for each intersection, as indicated by the dot-and-dash lines.

## Car-Cleaning Practice

The United Railways of St. Louis have built two car-washing plants at different points on the system, one of these holding four cars and the other six cars at one time. In these plants water is squirted from perforated overhead pipes on to the sides of the cars and is supplied to hoses for interior washing, the cars being tilted so that the wash water drains out of one end of the car into a tank on the floor. The wash water is filtered and used over again, being pumped into overhead storage tanks. Rain water from the building roofs is collected and ordinarily is used for make-up purposes.

In Chicago car cleaning at stated intervals has been considered as of less importance than the sweepings at the end of each run, especially on account of the dirt which may be collected during one trip in stormy weather. The same idea has been carried out to its logical conclusion on the Hudson & Manhattan Railroad, where cars are swept four times a day and are cleaned, including the use of whitening and water on the windows, every forty-eight hours. In one of these four daily sweepings the remarkable record of forty-five seconds per car is maintained as a regular routine. This sweeping is one that is made between 6:30 and 7:30 o'clock in the evening to provide clean cars for the theater crowds. At this time, which is included in the evening rush hour, there is not sufficient equipment to permit holding of cars out of service, and the wait at the terminal is only of ninety seconds duration. When a train comes in, a man enters each car and scatters at one end sawdust that is moistened with disinfectant, sweeping it down the length of the car with a 24-in. broom. This broom is wide enough so that two strokes cover the full width of the aisle. The doors at the end of the car where sweeping is begun are opened when the sweeping has progressed to the middle of the car, so that loading of passengers can begin at the earliest possible moment. The whole sweeping operation requires only forty-five seconds, leaving an equal amount of time for the loading of the end of the car at which the sawdust and dirt are swept out. Wiping of seats, stanchions and windows is done at night when the cars are laid up.

An exhaustive investigation into the subject of exterior washing made in Detroit discloses the fact that improper methods may result in annual damage equivalent to thousands of dollars worth of painting on a moderately large city system. The company has, therefore, systematized its whole procedure of washing, making it a standard practice to keep wash water at a temperature below 80 deg. Fahr.; to supply standard stock soda solution to all stations; to have a rinsing follow the soaping without delay and to wet down each car thoroughly before washing to soften mud and sand collected on it. The use of soda ash is prohibited. It is reported that, in consequence, the cars look much cleaner and brighter and no longer have the "dead" look that characterized them in the past.

In Kansas City the Metropolitan Street Railway Company experimented at one of its carhouses from which seven lines were operated to see whether the selling of waste paper collected in the cars could be made profitable. On the seven lines enough discarded newspapers were picked up each month to average about three tons of waste paper, for which the normal market price was

\*This chart is reproduced here on a small scale to show the principle involved. For office use the ELECTRIC RAILWAY JOURNAL will supply larger copies to readers, on request and without charge.



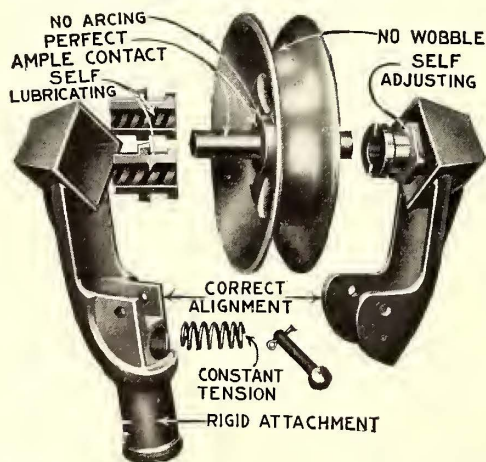
20 cents per 100 lb. For collecting the waste paper each coach cleaner at the carhouse was provided with a burlap sack, and the filled sacks were stored in an old coach, the sale of the paper taking place each month. The car crews also collected waste paper after each trip, storing it temporarily under one of the seats of the cars.

In Detroit the same scheme is carried out, sheet metal receptacles being provided in each carhouse for the storage of the waste paper. In these receptacles are canvas sacks which, when filled, are tied up and taken to the machine shop, where the paper is pressed into 300-lb. bales. The bales are held until a carload has accumulated, at which time the paper is sold, bringing usually about \$6 per ton or 30 cents per hundredweight.

Car cleaning at all surface carhouses of the Boston Elevated Railway is conducted according to a regular printed schedule. The semi-convertible cars forming the company's latest standard equipment for surface line operation have their painted work and side glass mopped daily except in foul weather, and daily the vestibule glass is cleaned and mud splashes are removed. The daily work also includes the testing and filling of sand-boxes, sweeping of car body, vestibule and steps, removal of heavy dirt by scrapers, and dusting, the last operation being performed not less than two hours after sweeping. The periodical cleaning covers washing of car exteriors after each rainstorm; washing of painted woodwork, dashers and exterior signs every two months; a fortnightly cleaning of monitor glass and a monthly cleaning of headlights. Interior glass is cleaned weekly; curtains, platforms and steps every two weeks, dashers are washed twice a month and painted twice a year, and woodwork and side sills in car body and vestibules and also monitor glass are cleaned monthly.

### Trolley Wheel and Harp Run 22,608 Miles Without Lubrication or Adjustment

Several new features have been incorporated in the trolley wheel and harp made by the Traction Appliance Company, Vincennes, Ind. This type of harp, which is known as the "Autograph," includes a well-balanced



HARP RUN 22,608 MILES WITHOUT LUBRICATION OR ADJUSTMENT

bronze trolley wheel into which a steel spindle has been inserted with a drive fit to make it integral with the wheel. The spindle in turn fits into outside bearings that provide for self-lubrication and for automatically taking up or compensating for the wear of either spindle or bearings. These functions are accomplished by making the harp in two sections which hinge together and which are held in position by a single pin fastened with a cotter. A coil spring set in pockets at the base of the

two parts of the harp exerts a pressure which tends to force the split bearings against the hub faces of the trolley wheel, thus continuously maintaining correct alignment of the wheel and full electrical contact.

The self-lubricating bearings, which are pressed into sockets in the two parts of the harp, are mounted in pyramid-shaped boxes. These bearings are made of bronze and graphitic inserts, a product of the Graphite Lubricating Company. They are self-lubricating and are said to outwear the wheel. The pressure exerted by the spring at the base of the trolley harp insures a snug fit between the bearings and the spindle and also holds the bearings firmly against the hub, thereby providing automatic adjustment. Because of this method of obtaining widely-separated bearing surfaces and high conductivity, this type of harp is said to increase from 75 per cent to 100 per cent the life of any standard wheel. The maker states that the Vincennes (Ind.) Traction Company in a test made with a 5-in. "Autograph" trolley wheel and harp, from April 21, 1914, to Jan. 2, 1915, obtained 22,608 miles without lubrication or adjustment.

### Kansas City Tractor and Trailer Truck

The Metropolitan Street Railway Company, Kansas City, Mo., has cut in two its haulage costs per ton for handling rock and gravel for track construction by means of a motor truck including a trailer body pulled by a tractor. Aside from its reduction in hauling cost this outfit will also deliver as much material in a working day as can be handled by a work train, for the truck can be kept constantly at work while the



TRACTOR AND TRAILER TRUCK OF THE METROPOLITAN STREET RAILWAY, KANSAS CITY, MO.

work train would be standing still for loading or unloading. Two interchangeable trailers are employed. They can be attached or detached from the tractor in a minute. Thus the tractor makes a trip while the second trailer is being loaded. The trailers are built with automatic dump-bottoms, and are dumped by means of levers controlled by the driver.

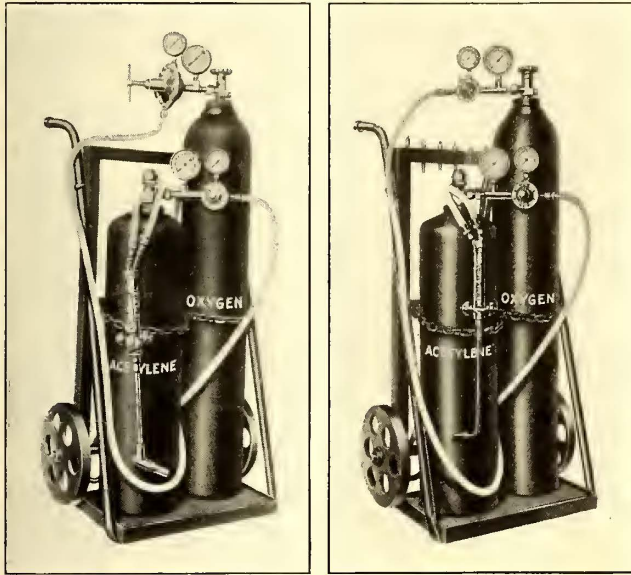
The tractor is made by the Knox Motor Company, Springfield, Mass. The trailer body is manufactured in Kansas City by the Bull Dog Manufacturing Company, and is known as the "Bull Dog" trailer. The two trailers in use by the Metropolitan company are the first which the new company has manufactured.

The Westinghouse Electric & Manufacturing Company advises that the type BR frog, described on page 428 of the ELECTRIC RAILWAY JOURNAL for Feb. 27, is not designed for one degree of angle only as might be inferred from the caption. The frog is designed for several degrees of angle.



## Oxy-Acetylene Equipment for Wide Range of Service

Oxy-acetylene welding and cutting equipment asserted to possess some exclusive features has recently been placed on the market by the Imperial Brass Manufacturing Company, Chicago, Ill. One of these features is that of thorough and uniform mixing of the two gases employed; another is the close and accurate regulation of both volume and velocity of the gases delivered to the mixing chamber of the torch to maintain either



OXY-ACETYLENE CUTTING AND WELDING OUTFITS

a constant fixed pressure or a wide range of pressures. The successful solution of these features means the elimination of dangerous back-firing, undue consumption of gases and burning of tips.

Before entering the mixing chamber of the torch, the oxygen, under high velocity, passes through a spiral groove which imparts to it a whirling motion. The whirling motion of the oxygen causes it to mix thoroughly with the acetylene with the result that a uniform mixture is obtained before the gases reach the combustion point. A saving of oxygen is thus obtained and an increased intensity of welding flame and greater efficiency in cutting.

The welding and cutting torches are fitted with interchangeable tips to cover all ranges of work within the limits of the process. The torches are very simple in design and durable in construction, no solder being used in their manufacture. The needle valves permit fine adjustment and are located so that the operator can make any desired adjustment of the flame with the hand that holds the torch, making it unnecessary to lay aside the welding stick.

The welding tips are made of a special alloy with an extremely high melting point, making it peculiarly adaptable for the purpose and insuring long life. All threading and measurements of these tips are standard, so that in an emergency the user can readily make a new tip for temporary use from ordinary brass rod in any machine shop and go on using the torch until a new tip can be secured from stock or the maker.

Due to the perfect mixture and accurate regulation of gases obtained with this equipment, the welding flame generated is a long, white, incandescent jet, free from carbons and oxides.

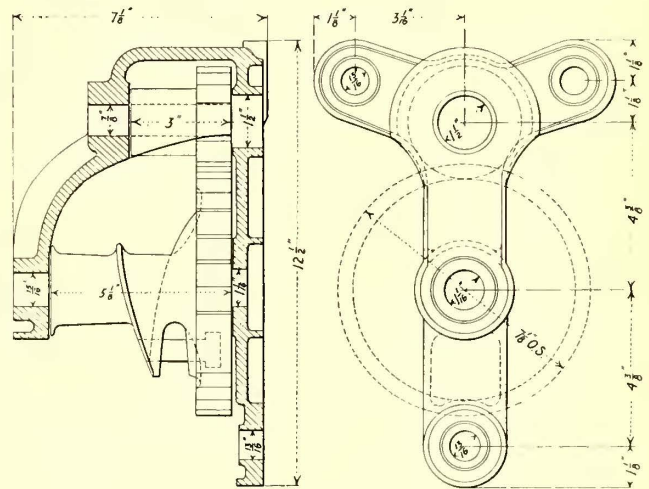
The cutting tips are made of special alloy. Their design is intended to eliminate refractory heat and to

prevent the burning out of the tips, as the velocity of the gas passing through the connecting conduits has a tendency to cool the tips. The cutting flame generated by the torch is a very closely confined and accurately proportioned jet of maximum efficiency and makes a clean, quick, narrow cut with the least consumption of gas.

The regulators deliver an absolutely constant, predetermined volume and velocity of gas to the torch, and the movement of the valve with relation to the valve seat, is so limited as to prevent cutting of the seat, thus insuring long life. In cutting operations, under high pressure, the regulators will automatically shut off in an emergency—a safety feature asserted to be exclusive with this maker. The regulators are made in several different types to cover every requirement of service, clean, narrow cut with the least consumption of gas.

## A Geared Hand Brake Weighing Only 25 lb.

The great strides that have been made in the development of powerful yet light and durable geared hand brakes are evident in the Type G Peacock brake shown in the accompanying drawing. This brake was brought out as early as 1911 by the National Brake Company, Buffalo, N. Y., for service on the storage-battery cars of the Third Avenue Railway System, New York. Since



LIGHT-WEIGHT GEARED HAND BRAKE

then that railway has equipped 160 storage-battery cars with the same brake and the New York Railways has followed its example. To-day, therefore, more than 200 storage-battery cars in New York alone use the Type G. The Third Avenue Railway has not been obliged to spend a cent for the maintenance of its brakes, although many of them have been under hard usage for three to four years.

While the Type G brake complete weighs only 25 lb., its 14:34 gear ratio enables the motorman to develop a chain tension of more than 900 lb. when he exerts a 50-lb. pull on a 12-in. handle. The braking apparatus is also very compact since the platform space required is only 8 3/8 in. x 12 1/2 in. The maker advises that this type of brake is particularly suitable for single-truck or double-truck cars weighing up to 25,000 lb.

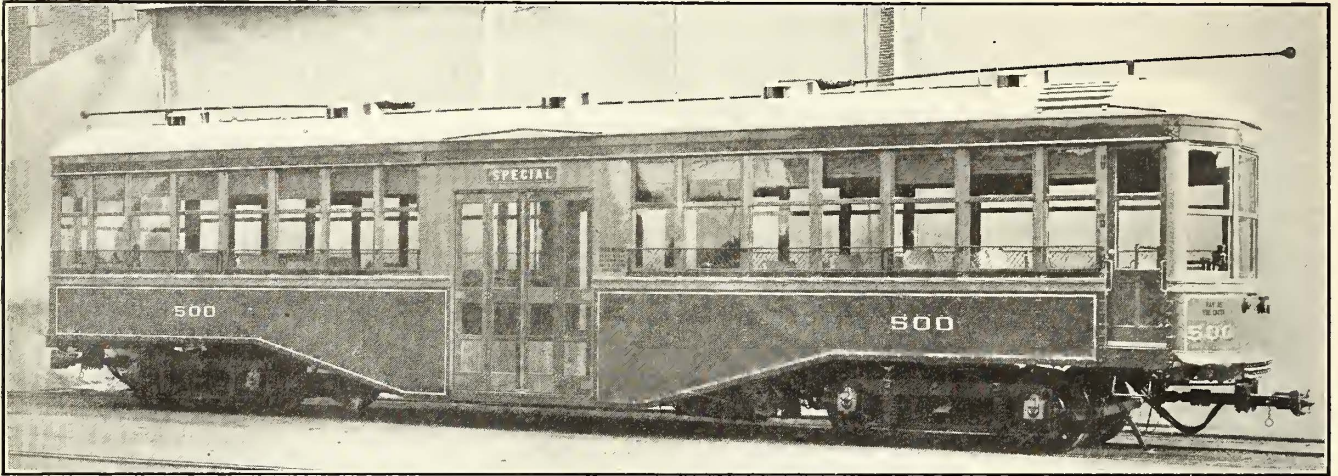
The Metropolitan Street Railway Company, Kansas City, Mo., has supplemented its street car "safety first" placards with similar cards for the carhouses. The series now includes five cards, and each day one of these cards is put in a frame under the clock, on which are the words: "See Safety Bulletin To-day."



### Center-Entrance Cars for Wilkes-Barre

The Wilkes-Barre (Pa.) Railway has lately received from The J. G. Brill Company six center-entrance steel cars which are to be operated as prepayment cars from the center of Wilkes-Barre out through three or four suburban towns. Each car seats sixty passengers in the customary combination of transverse seats for the greater part of the car and longitudinal seats at the doorways and corners. At the ends, however, the usual

The body is mounted on two No. 27 MCB-2X trucks with 30-in. wheels. Each truck carries two Westinghouse 532-B motors. HL control is used, together with Ackley hand and Westinghouse semi-automatic air brakes. On account of clearance conditions due to the well, two small reservoirs instead of one large one are used. Effective train operation on short curves, such as occur particularly on the city division, is provided by Tomlinson Form 8 couplers.

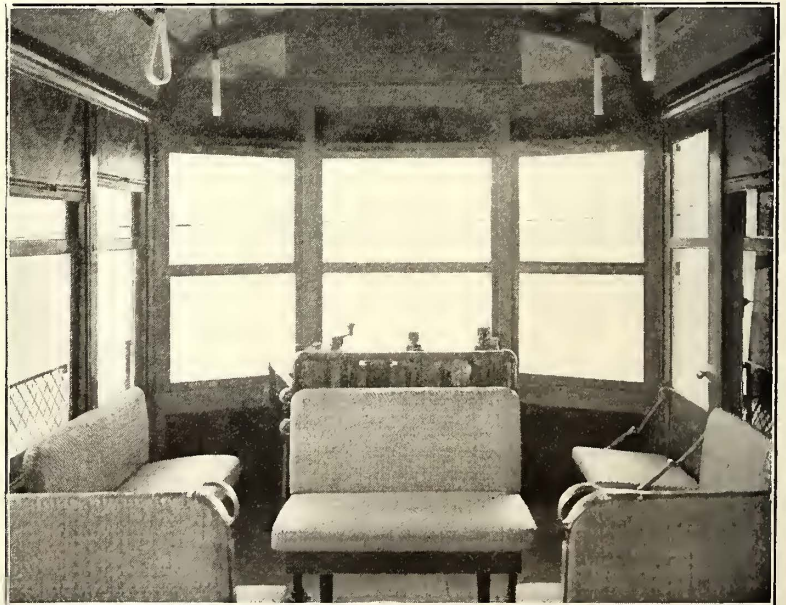


WILKES-BARRE CAR—SIDE VIEW, SHOWING PARTIAL GLAZING OF BOTTOM PANELS IN CENTER DOOR; ALSO DOOR FOR USE OF MOTORMAN IN THROWING SWITCHES, ETC.

semicircular seating is replaced by a double cross-seat backed against the railing behind the motorman's equipment, by a folding seat placed on the motorman's exit door and by a longitudinal seat opposite this door.

The length of this car is 47 ft. 2 in. over the vestibules and 48 ft. 2 in. over the Hedley anti-climbers; the distance between the truck centers is 30 ft.; the width

The entrance step is only 11 in. above the pavement. This is followed by a ramp of 4 in. to the center of the well, a riser of 12 in. from the edge of the well to the main aisle and finally a ramp of 11 in. within a run of approximately 11 ft. to the highest point of the floor line. Division railings are not used at the doors. However, a vertical stanchion is provided in the center with



WILKES-BARRE CAR—VIEW AT CENTER, SHOWING RAMP IN WELL, DOOR CONTROL STANDS AND SUPPORTING RAILS; ALSO THE OPEN VESTIBULE WITH CURTAIN ABOVE AND THE FOLDING SEAT ON MOTORMAN'S DOOR

over the sills, 8 ft. 1 $\frac{3}{4}$  in.; the height from the sill to the trolley base 8 ft. 7 $\frac{3}{4}$  in. and the height from the top of the rails to the sills 11 in. at the center and 2 ft. 8 in. elsewhere. The underframe is built up of channels and angles, the sides include angles and T-posts with 3/32-in. side plate carried to a height of 2 ft. 5 in. outside of center section and roof is also framed in steel.

rails and stanchions at the edges of the well to aid passengers to reach the upper level most safely. A compact hand control stand for opening and closing the folding doors has been provided, as shown. The door on the right-hand side is operated from the standard on the same side and vice versa, thus shortening the operating levers.



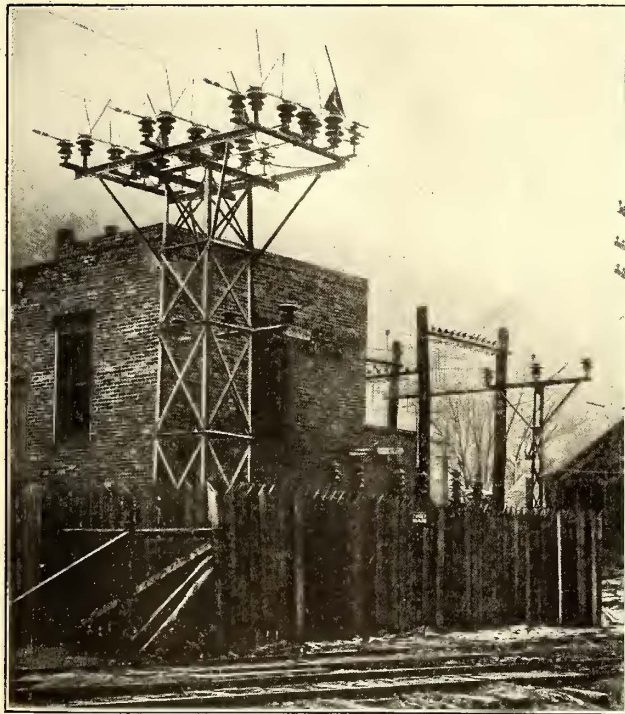
## Small Mazda Lamps with Concentrated Filaments

The distinctive features of the concentrated filament Mazda lamps of high wattages have proved so popular that the Edison Lamp Works of the General Electric Company has developed vacuum Mazda lamps of similar appearance in the 25-watt, 40-watt and 60-watt sizes. This concentrated filament construction gives greater vertical distribution of light than the regular Mazda lamps of corresponding wattages. The new lamps will, therefore, be employed where natural distribution of light downward is required.

These lamps will be made in the same sized bulbs as the corresponding regular Mazda lamps, will have the same spherical watts per candle-power efficiency and will have a rated average life of 600 hours.

## Outdoor Substation

The outdoor substation illustrated is one of the new designs of the Transmission Engineering Company, Pittsburgh, Pa., and provides for mounting the transformers on the ground. It was installed for the Virginia Western Power Company at Covington, Va. The installation consists of three 100-kw O.I.S.C. single-phase transformers. The transmission system is operated at 44,000 volts and is about 64 miles long.



OUTDOOR SUBSTATION AT COVINGTON, VA.

The transmission line is dead-ended to the steel tower which carries the Burke horn gap switch, lightning arrester and fuse. A steel pole is used to support one end of the high-voltage bus wires over the transformers.

This construction is well adapted where the transformers are too large to be carried on a platform above the ground.

In a recent interview, Maurice Coster, manager of the foreign department Westinghouse Electric & Manufacturing Company, expressed the opinion that if the British government takes over many factories to make war materials directly, according to powers granted by the House of Commons on March 9, many orders for material of a non-military character are likely to come to this country.

## Exhibits at Panama-Pacific Exposition

### Electric Railway Apparatus Shown in Both the Palaces of Transportation and of Machinery

Under the plan of classification of exhibits adopted by the directors of the Panama-Pacific Universal Exposition at San Francisco, the exhibits of electric railway interest are divided between the Palace of Transportation and the Palace of Machinery. In the former are the exhibits of cars, locomotives, car seats, track, etc., while in the Palace of Machinery are electric motors, power station equipment, machine tools, etc. Several companies have exhibits in both buildings, and others have entries in both groups of exhibits but are exhibiting in one place only. A list of all of the exhibits by manufacturers of electric railway interest in these two buildings would contain nearly as many names as the official catalogue, but the following have been selected as typical.

#### RAILWAY GROUP IN PALACE OF TRANSPORTATION

- American Brake Shoe & Foundry Company, Mahwah, N. J.; railway equipment.
- Baldwin Locomotive Works, Philadelphia, Pa.; railway equipment, trucks.
- Brill Company, The J. G., Philadelphia, Pa.; railway equipment.
- Galena-Signal Oil Company, Franklin, Pa.; signal oils.
- General Electric Company, Schenectady, N. Y.; electric locomotives, car-control equipment, etc.
- Griffin Wheel Company, Chicago, Ill.; railway equipment.
- Hale & Kilburn Company, Philadelphia, Pa.; car equipment.
- National Malleable Casting Company, Cleveland, Ohio; railway equipment, couplers, etc.
- New York Air Brake Company, New York, N. Y.; railway equipment, brakes, etc.
- Nuttall Company, R. D., Pittsburgh, Pa.; gears, pinions, trolleys.
- Pennsylvania Steel Company, Philadelphia, Pa.; railway equipment.
- Rail Joint Company, New York, N. Y.; railway equipment.
- Railway Motor Car Company, Marion, Ind.; railway equipment.
- Safety Car Heating & Lighting Company, New York, N. Y.; car equipment.
- Service Recorder Company, Cleveland, Ohio; recording devices.
- St. Louis Steel Foundry, St. Louis, Mo.; track work.
- St. Louis Car Company, St. Louis, Mo.; electric railway equipment.
- Taylor-Wharton Iron & Steel Company, High Bridge, N. J.; track work.
- Union Switch & Signal Company, Swissvale, Pa.; railway equipment, signals.
- United States Steel Products Company, New York, N. Y.; turntable.
- Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa.; railway equipment, electric locomotives, motors and control devices, etc.

#### PRIME MOVERS AND ACCESSORIES IN PALACE OF MACHINERY

- Babcock & Wilcox Company, New York, N. Y.; boilers, superheaters, stokers.
- Busch-Sulzer Brothers Diesel Engine Company, St. Louis, Mo.; internal combustion engines.
- Gold Car Heating & Lighting Company, New York, N. Y.; thermostats, pressure systems, ventilators.
- Harrison Safety Boiler Works, Philadelphia, Pa.; boil-



ers, feed-water heaters, V-notch meters, steam and oil separators.

Hoppes Manufacturing Company, Springfield, Ohio; feed-water heaters, V-notch recorders, steam and oil separators.

Lagonda Manufacturing Company, Springfield, Ohio; boiler fittings, tube cleaners, water strainers, automatic steam stop and chuck valves.

Lunkenheimer Company, Cincinnati, Ohio; boiler mountings and equipment, whistles, oiling devices, injectors.

McIntosh & Seymour Corporation, Auburn, N. Y.; Diesel oil engines; steam engines.

National Tube Company, Pittsburgh, Pa.; tubes, pipes and fittings.

Nelson Valve Company, Philadelphia, Pa.; valves.

Pelton Water Wheel Company, San Francisco, Cal.; water wheels, centrifugal pumps, recorders.

Pratt & Cady Company, Inc., Hartford, Conn.; valves.

Schaeffer & Budenberg Manufacturing Company, Brooklyn, N. Y.; indicating and recording tachometer.

Westinghouse Machine Company, East Pittsburgh, Pa.; steam turbines, condenser and auxiliaries.

Worthington, Henry R., New York, N. Y.; power pumps.

Yarnall-Waring Company, Philadelphia, Pa.; steam valves.

#### GENERAL GROUP IN PALACE OF MACHINERY

American Cast Iron Pipe Company, Birmingham, Ala.; pipe.

Chisholm & Moore Manufacturing Company, Cleveland, Ohio; chain hoists, traveling cranes.

Cowan Truck Company, Holyoke, Mass.; trucks for handling heavy stock.

Electrene Company, New York, N. Y.; fire extinguishers.

Falk Company, Milwaukee, Wis.; gears.

International Acheson Graphite Company, Niagara Falls, N. Y.; lubricants.

Joyce-Cridland Company, Dayton, Ohio; lifting jacks.

Lunkenheimer Company, Cincinnati, Ohio; lubricants.

McGraw Publishing Company, Inc., New York, N. Y.; technical periodicals.

Minnesota Manufacturers' Association, St. Paul, Minn.; conveying machinery.

National Brake & Electric Company, Milwaukee, Wis.; air compressors and accessories.

National Tube Company, Pittsburgh, Pa.; pipes and fittings.

Pawling & Harnischfeger Company, Milwaukee, Wis.; excavating machinery and accessories.

Pyrene Manufacturing Company, New York, N. Y.; fire extinguishers.

Robinson & Son Company, Wm. C., Baltimore, Md.; oils and lubricants.

Shepard Electric Crane & Hoist Company, Montour Falls, N. Y.; electric cranes and hoists.

Standard Oil Company, San Francisco, Cal.; lubricants.

#### MACHINE TOOLS IN PALACE OF MACHINERY

Bliss & Company, E. W., Brooklyn, N. Y.; metal-working machinery.

Carborundum Company, Niagara Falls, N. Y.; grinding materials.

Cincinnati Electrical Tool Company, Cincinnati, Ohio; electrically driven tools.

Detroit Twist Drill Company, Detroit, Mich.; drills, reamers, etc.

Henderson-Willis Company, St. Louis, Mo.; oxy-acetylene equipment.

Jahnke Welding & Manufacturing Company, San Francisco, Cal.; oxy-acetylene equipment.

McLeod Company, Cincinnati, Ohio; oxy-acetylene equipment.

Superior Corundum Wheel Company, Waltham, Mass.; grinding and abrasive materials.

U. S. Electrical Tool Company, Cincinnati, Ohio; electric drills and grinders.

U. S. Steel Corporation, Pittsburgh, Pa.; collective exhibit tool steels.

#### ELECTRICAL AND DISTRIBUTION APPARATUS IN PALACE OF MACHINERY

American Bridge Company, New York, N. Y.; steel towers and poles.

American Steel & Wire Company, Chicago, Ill.; electric wire and cables.

D & W Fuse Company, Providence, R. I.; electric fuses.

Economy Fuse & Manufacturing Company, Chicago, Ill.; electric fuses.

General Electric Company, Schenectady, N. Y.; direct current and alternating current generators and motors, meters, switchboards, transformers, lamps, battery trucks, gearing, electric drills.

Gest, G. M., New York, N. Y.; underground electric conduit systems.

Sangamo Electric Company, Springfield, Ill.; measuring instruments, transformers.

Standard Underground Cable Company, Pittsburgh, Pa.; wires and cables, wire braiding machines, etc.

Thomas & Sons Company, R. East Liverpool, Ohio; high and low tension insulators.

United States Steel Corporation, Pittsburgh, Pa.; electric line material.

Western Electric Company, New York, N. Y.; electric generators.

Westinghouse Air Brake Company, Pittsburgh, Pa.; air brakes and compressors.

Westinghouse Electric & Manufacturing Company, Pittsburgh, Pa.; direct and alternating current generators and motors, switchboard instruments, lamps, turbines and accessories, transmission gears, welding display, etc.

Westinghouse Traction Brake Company, Pittsburgh, Pa.; air brakes and compressors.

### Field-Control Motor Speeds

In an article in the *Electric Journal*, R. E. Hellmund of the Westinghouse Electric & Manufacturing Company states that in order to accomplish the desired saving in power consumption field-control motors should have a full-field speed below that of the standard non-field-control motors. In general, it will be found that the saving in power consumption will be the larger with a lower speed at full field. But here again it is necessary to compromise to some extent because a very low speed at full field means large increase of flux calling for heavy sections in the motor frame and consequent heavy motor weight. Going too far in this direction would, therefore, mean that the increased motor weight might nullify the gain made by too large a decrease in the speed.

Another important point to be considered in this connection is that the larger the difference between the full field and the short field and their respective speeds, the larger will be the current rush when changing over from full field to short field. Excessive current rushes are not only undesirable because they strain the motor and the electrical equipment in the car, as well as the gears, but also because they would defeat one of the main purposes for using field-control motors, namely, the avoidance of large current peaks. In most cases a difference of about 20 per cent to 35 per cent between the full-field and short-field speeds of a field-control motor at the one-hour rating seems to be the best all-around compromise.



# News of Electric Railways

## LEGISLATIVE COMMITTEE REPORT

### Three Reports Presented by the Committee Appointed to Inquire Into New York Commission

On March 9 three reports in regard to the working of the Public Service Commission for the First District of New York were submitted to the Legislature and Governor Whitman by the legislative committee which had been inquiring into the work of the commission. The majority report, signed by all Republican members, said that "results reasonably to be expected" had not come from the work of the commissioners. A supplemental Republican report says that the commissioners were inefficient, dilatory and neglectful. A Democratic report indorsed their work. A separate communication to the Governor from the majority members of the committee said that the findings of fact in the majority report, if undisputed in effect, constituted neglect of duty on the part of the commissioners. It suggested that the Governor give the members a hearing before taking further action. The supplemental Republican report was signed by Assemblymen Knight and McQuiston and Senator Lawson, who also signed the majority report. Their reason for the supplemental report was summed up by Mr. Knight as follows:

"We worked for three weeks trying to learn whether the commission were deficient. We decided to state our conclusions in our report, notwithstanding the fact that other members of the committee wanted the report to contain only a summary of the testimony so that the Governor could act without any recommendations on our part. In our opinion the resolution authorizing the investigation requires us to draw conclusion from the evidence."

The majority report summary of findings follows:

"In short, your committee finds that the commissioners of the first district have not put in operation the provisions of the public service commission law for the regulation of the public service corporations in a manner to have produced the results reasonably to be expected."

The conclusion of the supplemental report follows:

"From the facts stated in the majority opinion our conclusion is that the Public Service Commissioners of the First District have not been efficient in the administration of the affairs of their offices, have been dilatory in the disposition of complaints, and have neglected their duties, in that they have failed to enforce and put in operation for the benefit of the public, the purposes of the public service commission's law."

The minority report of the Democrats said that the commission was not only overcrowded with work, but that the law contained many "jokers" which favor the corporations regulated by it, and that in spite of these conditions the commission had exhibited "marked efficiency in building the subway system." The Democrats did not see anything serious in the failure, noted by the majority, on the part of the commissioners to give personal attention to many matters coming before the commission. In this connection the Democrats said that "when propositions involving hundreds of millions are in question, the neglect to give personal attention to matters of comparatively small importance is largely excusable."

The report of the majority takes up the general work of the commission and then refers specifically to the work of Commissioner McCall, Commissioners Wood and Cram and Commissioner George V. S. Williams. It concludes:

"As a result of this investigation your committee finds that the complaints of citizens regarding service on transit lines in the city of New York have not received from the Public Service Commission the attention that the circumstances require; that through their failure to enforce their orders, inadequate transit conditions have existed for long periods of time without improvement, viz.: service on the Interborough Rapid Transit and the Brooklyn Rapid Transit lines during the non-rush hours; that they have not changed or improved the system of handling complaints, which system, in our judgment, is inadequate and faulty; that they have not taken sufficient interest in said complaints and in some instances have given little if any support or

encouragement to the subordinates of the commission; that as a result of said lack of interest and support the efforts of said subordinates have been in many instances futile and ineffective; that in one important instance, at least, the complainants were led to believe by the commission that their complaints might receive attention, whereas the commission had already determined the case in the negative; that for long periods of time no effective action has been taken to make orders affecting service on transit lines, or to enforce orders already made; that the said commission as a whole was at no time actively operative in enforcing its orders by the three remedies provided by the public service commissions law, resulting in some instances in a condition which the records of the commission characterized as 'violation with impunity' by the corporations. In short, your committee finds that the commissioners of the first district have not put in operation the provisions of the public service commissions law for the regulation of public service corporations in a manner to have produced the results reasonably to be expected."

## THE MOON POST-OFFICE BILL

There has been considerable speculation in Washington in regard to the reasons why the annual post-office appropriation bill was killed in the closing hours of the Sixty-third Congress, which adjourned on March 4. In order to avoid a special session for the purpose of providing revenues for the postal service in the next fiscal year the Senate and the House adopted a joint resolution continuing for the coming year the appropriations made for the present fiscal year. One theory advanced in explanation of the unusual action of Congress in continuing by a simple resolution authority to expend about \$325,000,000 is that the bill failed because it was apparent that the Senate would not agree to the provisions for a readjustment of railway pay for carrying the mails because these provisions were so drawn as to give the Postmaster-General authority to adjust this compensation in a way that would reduce an expected heavy deficit in postal revenues at the expense of the railroads. Another theory is that the House would not consent to the provisions for a readjustment of the compensation of rural carriers and the absence of a provision to forbid the Postmaster-General from demoting letter carriers to save money. Representative John A. Moon, Tennessee, chairman of the committee on post-offices and post roads, is reported to have said that the resolution to continue the postal appropriations was drawn as a result of a conference of Leader Underwood of the Democrats, Leader Mann of the Republicans, Chairman Fitzgerald of the committee on appropriations, Controller Downey of the treasury department, and financial experts of the treasury. Mr. Moon was quoted in this connection in part as follows:

"This is not to be the end of the matter. When Congress assembles in December the post-office appropriation bill will be introduced practically as it stands in the matters in which reform is demanded. It has cost the government more than \$600,000 to secure the information leading up to this legislation, and we are justified in going forward, and we shall go forward."

Ralph Peters, president of the Long Island Railroad and chairman of the committee on railway mail pay representing the railroads of the country, said:

"In standing firmly against the passage of Representative Moon's confiscatory railway mail pay rider in the post-office appropriation bill, the Senate, during the last hours of Congress, performed a notable act of justice. The Moon rider would have made the Postmaster-General sole dictator of what the railroads would be paid for mail transportation. It would have enabled the post-office department, in Representative Moon's own words, 'to force the railroads to carry all your parcel post probably without any additional compensation.' With this obviously unjust measure now out of the way, the new Congress can proceed in a sane and orderly manner to provide the railroads their long-delayed fair payment for carrying the parcel post."



## M. L. COOKE ON UTILITIES

## STRIKE IN OHIO

## Philadelphia Director Criticises Their Policies

Morris L. Cooke, director department of public works, Philadelphia, and acting director of the Utilities Bureau, gave two lectures on public utilities at Harvard University, Cambridge, Mass., on March 4 and 5. He said, in part:

"Among the agencies which force compliance with standard and business practices imposed from the top are the national organizations provided for each type of utility, such as the National Electric Light Association, the Commercial Gas Association, the American Electric Railway Association and others. Practically every worker in these lines who is in good standing with the powers that be is forced to join these organizations, and those who do not enjoy the favor of those at the top are practically barred from membership.

"The National Electric Light Association also works in close harmony with and supports such sexless public opinion forming agencies as the bureau of public service economics, the director of which appeared as a speaker at a public meeting in the City Hall, Philadelphia, devoted to electric light and power, and two weeks later was in Washington, D. C., choosing the 'citizens' who later appeared before a Congressional committee in opposition to the purchase by the government of the street railways in the District of Columbia.

"Last year the American Electric Railway Association gave forth a 'code of principles' which advocated among other things fair returns on capitalization, no matter how extravagantly watered, exclusive State control of the local utilities and the holding company. The same report advocated the creation of a financed bureau of public relations which is to have among its various functions that of 'influencing the sources of public education.' . . . The trend of reaction must have seemed pretty strong to have warranted such a pronouncement.

"That efforts are already being made to influence the sources of public education is shown by such courses of lectures as those given at the School of Commerce of Northwestern University by William D. Kerr, until recently director of the bureau of public service economics, and more particularly those given under the auspices of the so-called finance forum of the West Side Y. M. C. A. in New York City, where every speaker was the employee of a privately owned and privately operated utility or actively allied, as shown by this schedule. That these lectures were considered wholly 'safe' is shown by the fact that they were all published in pamphlet form and distributed free of charge by a Wall Street investment banking house of high reputation."

Mr. Cooke declared that the public is asked to look upon the deliberations of public service commissions as scientific, while insiders know that the method of State regulation carried on under the most favorable circumstances is a hit-or-miss method. "We have been rushed into this era of State regulation with such rapidity that, humanly speaking, it is impossible for any commission more than to scratch the surface of the field that has been assigned to it." Many public service commission laws have been drafted with a view to giving an unfair advantage to private companies.

"It is a safe statement," Mr. Cooke said, "that a Governor hardly ever appoints a commissioner without at least consulting leading men in corporations to be regulated. Corporations in approving or disapproving candidates use a type of sardonic wisdom which has grown out of their experience." Mr. Cooke declared that he had heard it stated by men in authority that the corporations never objected to the appointment of an honest and able young lawyer if he had little or no practice, "because it had been their experience that men so situated could be depended upon not to be too rigorous in decisions against companies. Again, corporations have worked for the appointment of weak-kneed but high-toned advocates of the rights of the people. Another cause operating seriously against regulation is the almost entire absence in practice of accepted theories of valuation. Those who control the utility situation deprecate any effort to establish generally accepted principles of valuation.

Mr. Cooke highly praised Prof. Edward W. Bemis, of whom he said: "He is cordially hated by the big men in the utility industries principally because he is a resourceful and competent witness in rate cases and knows how to meet the experts put forward by the private companies as perhaps can no other man."

The East Liverpool Traction & Light Company, East Liverpool, Ohio, and its striking motormen and conductors reached an agreement on March 9 and operation of the cars was at once resumed. The real question between them was whether the differences that had arisen could, under the contract, be submitted to arbitration, and it was agreed by both sides to leave this to Richard Brooks of Brooks & Thompson, attorneys and representatives of the company. He decided that this and some other questions could properly be submitted to arbitration. The men objected in the first place to the company's placing an extra man on one of the coal trains as motorman and insisted on a regular man. The company refused to make the change, but suggested arbitration. The men claimed that the trouble was not subject to arbitration, and this became the real dispute which finally caused the strike. The company agreed to put a regular man on the front end of the train and the man over whom the dispute arose on the rear end, and this was perfectly satisfactory. C. A. Smith, general manager of the company, said on March 11 that the line was again in regular operation.

## PUBLIC SERVICE COMMISSION INQUIRY

The inquiry by the Legislative committee into the work of the Public Service Commission of the Second District of New York was begun at Albany on March 4. Frank H. Mott, secretary to the commission, was the first witness. In no instance had the commission since his incumbency had occasion to push a penalty action against any corporation for failure to obey an order of the commission. The increase in the volume of work of the commission was responsible for the increase in the expenses. Mr. Mott reviewed the work of the commission since he was appointed secretary in June, 1913, and described the manner of conducting hearings. He also presented statistics of complaints, both formal and informal, and the orders issued on these complaints.

At the hearing on March 5 the committee confined itself largely to the case of the commission against the United Traction Company, Albany. Charles R. Barnes, electric railway inspector of the commission, testified that the first complaint against service in Albany was made in 1908. In May, 1912, a resolution authorizing the investigation of the United Traction Company was adopted. After the resolution to inquire into the service had been adopted, James F. Hamilton was appointed general manager of the company and the commission postponed the inquiry to give Mr. Hamilton time in which to put into effect changes which he had in mind. Mr. Barnes had nothing to do with the inquiry regarding the request of citizens for 3-cent fares during the rush hours in Rochester in which the commission refused to grant the request. All matters in regard to service on the electric railways in Buffalo which were formerly referred to Mr. Barnes now went to Devoe P. Hodson, the member of the commission from Buffalo.

Martin S. Decker of the commission was the witness on March 6. The question of the granting of rights to the Canadian-American Power Company was gone into.

At the hearing on March 8 Colonel William Hayward, counsel to the committee, questioned Mr. Decker about the Westchester lighting case. In this particular case rehearings were granted, as the final order of the commission had apparently afforded little relief. Mr. Decker said in general that the delay in some of the cases was not the fault of the commission. He referred to the long process involved in fixing the "reproduction costs" of public service plants for rate-making purposes. There was very little duplication of work by the Public Service Commission for the Second District and the Interstate Commerce Commission. Mr. Decker favored the first district commission having supervision over telephone rates in New York City, but was opposed to giving the first district commission jurisdiction in Long Island and Westchester. The salary of \$15,000 a year for each commissioner should not be reduced. A part of the session on March 8 was devoted to the action of the commission in approving the merger of the Syracuse, Lake Shore & Northern Railroad, the Rochester, Syracuse & Eastern Railroad and the Auburn & Northern Electric Railroad as the Empire United Railways.



## DETROIT'S PURCHASE AGREEMENT

### President Hutchins of Detroit United Says Acceptance of City's Purchase Offer Will Be Urged

Acceptance of the Detroit Street Railway Commission's purchase offer for the lines of the Detroit United Railway within the one-fare zone will be urged upon the stockholders of the company by the board of directors at the special meeting called for March 31, according to a letter which J. C. Hutchins, president of the company, has sent to the commission. The offer of the city is to assume the mortgage bonds of the company amounting to \$24,900,000. Mr. Hutchins said in his letter:

"The directors considered this important matter, in realization of the fact that the company's plant account records show an investment on these properties exceeding \$35,000,000 and of the further fact that should the principles employed in Cleveland to determine value be applied to the basic figures given you by Prof. E. W. Bemis, these properties have a value of more than \$30,000,000. The conditions in Detroit, however, are such respecting the desire of the city to municipalize these properties that the directors are willing to recommend to the stockholders acceptance of your proposal and will do so at the stockholders' meeting, stipulating only that this transaction shall be concluded within reasonable time limits, and, of course, with the understanding that a workable and legal plan for the assumption of the mortgage debt shall be formulated and carried into effect."

After the receipt of the letter the commission announced that the plans for the city acquiring the lines would be hurried so that, if possible, the plan of consummating the transaction could be presented at the meeting of the stockholders. The commission is proceeding on the assumption that the offer will be accepted by the stockholders, and it is desired to get all the legal tangles straightened out in order that the proposition may be submitted to the electors within a reasonably short time after the meeting. The commission stated that on account of questions involved the nature of the proposed agreement between the city and the Detroit United Railway probably would not be divulged until the draft has been completed.

## SEATTLE'S OPERATING RIGHTS

### The City's Right to Operate a Utility Outside the Corporate Limits Before the Court

Judge J. T. Ronald recently overruled the demurrer interposed by Corporation Counsel James E. Bradford in the case of the State of Washington against the city of Seattle, instituted on complaint of the state bureau of accountancy and inspection and seeking to restrain the city from operating that portion of the Lake Burien Street Railway line known as Division "C" of the municipal system, which lies outside of the city limits. Mr. Bradford argued that the complaint did not constitute facts sufficient for a cause of action. Judge Ronald took the position that it does and the matter will now be tried on its merits. W. V. Tanner, attorney general, appearing for the State and the State board of accountancy and inspection, asks for a permanent injunction restraining the city from operating any portion of the line outside of the city limits, on the grounds that such power has never been delegated the city by the Legislature. More than a year ago, when the Lake Burien line was offered to the city as an unincumbered gift by its promoters, the question of the city's right to operate a railway outside of the city was raised. Mr. Bradford advised the Council that the city had such right and acting upon that opinion the Council accepted the railway and bound itself to operate the line. In overruling the demurrer Judge Ronald held that the operation of the municipally owned system was not necessary to the city's existence and that such a power could be exercised only by virtue of a grant of the Legislature. In conclusion Judge Ronald stated:

"It is most certainly plain that the power of the city of Seattle to tax itself to operate a railway outside of its corporate limits was not expressly granted by the statute, and this being a power not essential to its corporate existence, I am compelled to hold that it is not implied or presumed, and

that the power given by the city charter to operate a car line outside the city limits is in conflict with the general law of the State."

## MASSACHUSETTS LEGISLATIVE NEWS

The committee on street railways has reported adversely on the bill for the state ownership of street railways. The measure provided that upon the petition of 10 per cent of the legal voters of the State, the question of public ownership should be placed upon the ballot, and upon a referendum in favor of the bill the following Legislature was to prepare a plan for the purchase of the existing lines. The committee on metropolitan affairs has reported in favor of the construction of a station in the Boylston Street subway, Boston, at Arlington Street and has reported adversely in reference to petitions for the construction of a tunnel in Dorchester extending the prospective Dorchester subway. The committee has voted leave to withdraw the petition of Senator Bagley that the Public Service Commission investigate the operation of trains on the Boston Elevated rapid transit lines and of cars in the Boston subways. Other bills acted upon adversely by the committee are one that subway cars be made of metal; that the Washington Street tunnel be extended to Dudley Street and the elevated structure be removed in Boston on that portion of the system, and that the Boston Transit Commission investigate the necessity of further rapid transit tunnels and subways, anticipating the requirements of the next twenty-five years.

## TOLEDO MUNICIPAL OWNERSHIP ORDINANCES

The ordinances providing for the issue of \$8,000,000 of bonds by the city of Toledo, Ohio, for the purchase of the property of the Toledo Railways & Light Company were brought up in the City Council on the evening of March 8. City Solicitor Thurstin declared that the people had expressed their conviction for municipal ownership and that it was the duty of the members of the Council to carry out their wishes. There are two ordinances, each calling for a bond issue of \$4,000,000. One provides for taking over the cars and tracks and the other for taking over the power house and other property of the company. The ordinances were referred to the committee on railways and telegraphs.

## PHILADELPHIA MEASURE SIGNED

Mayor Rudolph Blankenburg of Philadelphia has signed the amended Philadelphia transit measure passed by the Councils on March 4 and carrying an appropriation of \$6,000,000 for preliminary rapid transit work. The Mayor signed the bill upon the advice of his directors, especially Director Taylor of the Department of City Transit. Director Taylor's recommendation that the bill be approved was based upon the fact that, should a veto be sustained, there would be no hope of the passage of a proper transit ordinance this spring. In that event, the construction of rapid transit lines would be delayed for a year. The Philadelphia *Ledger* said that the action of the Mayor in signing the bill apparently committed the city to the construction of a Broad Street subway without terminal facilities, and with no provision for release of the heavy traffic in the congested business districts, and the construction of 3 miles of elevated structure through farm lands in the Northeast, but that the significant fact was that the passage of the measure did permit the city to begin the necessary preliminary work looking toward the construction of a more complete system in the future.

The Mayor said in part:

"We know that the ordinance is defective, but its defects are not so great that they cannot be remedied when reason shall take the place of folly, when business methods shall have superseded politics and selfish interests, by the passage of future transit ordinances. The ordinance now before me will make it possible for us to take the initial step in this important city-wide improvement, yet will not finally bind us to its inoperative features. Such defects can be corrected by popular vote in November next before much harm is done, for the final decision on a comprehensive and sensible plan for city transit rests in the hands of Philadelphia's electors, through the election of a free Mayor and a self-owning Council."



### KANSAS CITY INTERURBAN STATION

A committee of the City Council of Kansas City, Mo., on March 1 heard the application of W. E. Halsell and others for a franchise for an interurban station between Fourteenth and Fifteen Streets on Main Street. The company known as the Interurban Terminal Building Company has prepared plans for a six-story building, equipped with elevators, grill room and other conveniences, on a tract 225 ft. x 125 ft. The company is said to have the tentative approval of the site of the board of control of the Metropolitan Street Railway, contingent on the granting of the thirty-year franchise by the city.

The committee of the Council that heard the interurban station project outlined postponed further discussion until March 11. It was pointed out that even if the franchise should be granted and the city should establish an interurban station the interurban railways could not be compelled to use it. While the passenger station would not be used for a baggage terminal, it is thought that if the terminal station proposition is settled soon the railways will come to an agreement on the question of express terminals. Several other sites have been suggested for the interurban passenger station, and in the case of some of them the promoters are willing to do as much as Mr. Halsell and his associates toward erecting the building.

### LEGISLATION IN NEW YORK

Among the bills introduced in the Senate recently affecting public utility companies are the following: an act to amend the railroad law in relation to the minimum number of trainmen to be employed in the operation of certain trains; making the operation of trains at grade on certain of the tracks of the New York Central & Hudson River Railroad in the city of New York, a public nuisance, and providing for discontinuing the use by the said company of said tracks at grade and for the regulation and improvement of the railroad terminals that approaches thereto, and of the motive power to be used thereon, and for such purposes to authorize the city of New York to grant real property, rights and privileges to said railroad.

Among the bills introduced recently into the Assembly of interest to public utilities are the following: to compel the interchange of transfers between certain elevated and surface railroads in the city of New York; to amend Section 37 and Chapter IV of the laws of 1891 with reference to the assessment of cost and expense necessary to be incurred for the construction of a rapid transit railroad and for property to be acquired for the construction and operation thereof upon property benefited thereby; making the operation of trains at grade on certain of the tracks of the New York Central & Hudson River Railroad in the city of New York a public nuisance.

### TOLEDO BRIDGE ORDINANCE

An ordinance has been introduced in the City Council at Toledo, Ohio, which, if passed, will require the Toledo Railways & Light Company to pay a rental of \$35 a day for the use of the tracks on the new Cherry Street Bridge across the Maumee River. Under the same ordinance the interurban roads are required to pay \$5 a day for the use of the tracks.

Under a resolution adopted some time ago Director of Public Service Boardman was requested to ascertain the cost of laying the tracks on the bridge with a view to arriving at a basis for fixing the rentals. The length of the tracks on the bridge aggregate 1240 ft. and the cost was \$22,500. On Jan. 19, 1915, 1051 city cars and 161 interurban cars passed over the bridge. In his letter to the Council Director Boardman said he believed that the cost of the bridge should also be taken into consideration in fixing the rentals, as the company would have been compelled to build a bridge if the city had not done so. He recommended a charge of \$24.36 a day, but this was raised to the higher figure when it went to the Council. The ordinance is to go into effect on Oct. 28, 1915, and the rentals are to be collected monthly. If the local company or any interurban company fails to pay the rentals, the city through its police department is to prevent such company from using the bridge.

### PENNSYLVANIA ELECTRIFICATION PROGRESS

According to the annual report of the Pennsylvania Railroad for 1914, the electrification of the main line from Broad Street station, Philadelphia, to Paoli is progressing rapidly and without causing any serious interruption of traffic. The work from Paoli to West Philadelphia is almost completed, including the substations, and the remaining section of the electrification into the Broad Street station is being actively prosecuted. Satisfactory progress has also been made in equipping steel cars now in steam service with electric motors and apparatus in accordance with the original design. It is expected, therefore, to operate the main line suburban passenger trains by electricity about June 1, 1915.

The report states that it is hoped that in 1915 financial conditions will permit the extension of electrification to North Philadelphia and the Chestnut Hill branch, and also the elimination of certain grade crossings on that line. This would relieve the track and yard congestion at the Broad Street station, by transferring to the electric service more than sixty trains on a daily schedule now operated by steam. Further consideration was given during the year to plans for the future electrification of the main line crossing the Allegheny Mountains, from Altoona, the foot of the eastern slope, to Conemaugh, on the western slope, by which it is believed large operating economies can be effected and the heavy freight train movement facilitated.

### INDIANA LEGISLATURE ADJOURNS

The Indiana Legislature adjourned on March 8 at midnight. The House on March 3 failed to support Governor Ralston's recommendation that the Public Service Commission be given the right to increase railroad and interurban passenger rates to 2½ cents per mile upon petition and examination of the facts, by killing the Waltz bill which was introduced at the Governor's suggestion. The Senate also killed the Zearing bill, which provided for the control of "jitney" buses by the Public Service Commission. Another measure of interest to the public utilities of the State was Senate bill 316, which extended the time for taking indeterminate permits in lieu of existing franchises from July 1, 1915 (as provided in the public utility commission law enacted May 1, 1913) to July 1, 1917. This was killed by vote in the House on March 6, but on a motion to reconsider introduced on the last day, March 8, was passed by a vote of eighty to four.

The Senate passed the following bills: House bill 110 providing a penalty for the destruction or interference with railroad signals; House bill 492, providing that court service can be made on agent of receiver of a corporation when receiver is non-resident of State; House bill 419, providing a penalty for public service corporations charging rates in excess of published tariffs; House bill 176, which is the compromise workmen's compensation bill as amended in the Senate. A bill was introduced in the Senate on March 3 providing that receivers of insolvent companies may sue stockholders after the funds of the company have been exhausted to pay debts, to secure additional funds to pay indebtedness.

The House killed the following bills: Requiring railroad companies to cut weeds along the right-of-way; bill providing maximum interurban fare of 1½ cents; bill providing that where railroad intersections occur in persons' land they shall have right to construct roadway across right-of-way; bill providing that traction companies shall maintain two toilet rooms in each car; Senate bill providing that newspapers may exchange advertising for railroad transportation.

The House passed the following bills: Senate bill 98, prohibiting public utilities from diverting funds when an order for examination has been made by the Public Service Commission; House bill 171, amending public utility commission act by giving the commission sixty instead of thirty days to take action on railroad tariffs; Senate bill 239, giving Public Service Commission power to order separation of grade crossings in cities of 20,000 population or less; Senate bill 318, amending public utility act to permit railroad companies to give passes to employees who may hold public office.



## LEGISLATION IN OHIO

Senator Myers has introduced in the Ohio Legislature a bill which provides that officers of steam and electric railways may build and operate union passenger stations for the use of railroads and interurban railways. Present laws do not provide for this contingency. The Senate has passed the Myers bill which provides that service on receivers of interurban railways shall be valid when made in any county through which the road passes. The House has passed the bill which authorizes the Public Utilities Commission to order high-tension wires placed underground.

The Ott bill has been recommended for passage by the labor committee of the Ohio House. This bill, now somewhat modified in its form, provides for nine hours of work in a limit of eleven consecutive hours and twelve hours of continuous rest for motormen and conductors.

The Smith bill, requiring heat in the vestibules of street and interurban cars for the motormen and conductors, and screens to protect them from dust, has passed both houses and is before the Governor.

Representative Frank Reighard has presented a bill that will do away with the mandatory requirement that the Public Utilities Commission value the property of all public service companies and make such appraisements optional with the commission. The section of the old law will be repealed which requires the commission to make an appraisal on demand of the Council of a municipality where a dispute or disagreement on rates exists. If this bill becomes a law it may affect the proposed valuation of the property of the Cincinnati Traction Company, the franchise of which calls for a revision of fares in 1916.

**War Suspends Service.**—The Laredo Electric & Railway Company, operating in Laredo, Tex., and Nuevo Laredo, Mexico, is reported to have abandoned service on its line in the Mexican city because of lack of patronage and generally unsettled conditions.

**Increase in Return Allowed.**—The commissioners of Franklin County have so modified the franchise of the East Linden (Ohio) Electric Railway that it may receive a return of 8 per cent on its investment, instead of 6 per cent, before it is called upon to reduce its rate of fare from 5 cents to six tickets for 25 cents.

**Mayor Mitchel on Municipal Ownership.**—In an address before the Republican Club in Manhattan, on March 6, Mayor Mitchel of New York, in discussing the question of the new State constitution, said: "I hope to see the new constitution give to cities the right to determine for themselves how far they should go in the direction of acquisition of public utilities."

**Oak Park Elevated Suit.**—The bondholders of the Chicago & Oak Park Elevated Railroad, Chicago, Ill., have filed a bill in equity in the United States District Court declaring that although the road may have forfeited its rights to the use of the Market Street "stub" structure by accepting various city ordinances, the bondholders have not waived any of their rights, and therefore ask that the city's suit for condemnation be dismissed.

**The New Jersey Gas Case.**—Argument in the rehearing on the 90-cent gas rate was concluded on March 4 in the Court of Errors and Appeals at Trenton. In the absence of Richard V. Lindabury, counsel for the Public Service Corporation, Thomas H. McCarter, president of the corporation, made the principal argument. Chancellor Walker announced that the case would be taken under advisement in conference. The case involves the question of franchise value and has been referred to previously at length in the ELECTRIC RAILWAY JOURNAL.

**Pittsburgh Transit Measure.**—Representative A. C. Stein of Allegheny has introduced in the House at Harrisburg, Pa., two bills which are a part of the legislative program of Mayor Joseph G. Armstrong of Pittsburgh. One measure authorizes cities of the second class, Pittsburgh and Scranton, to construct subways for traction lines and pipe galleries and lease them to public corporations. The other authorizes all municipalities to purchase the entire capital stock of bridge companies owning structures wholly or partly within the limits of such municipalities.

**The Seattle Vote.**—With the defeat at the polls on March 2 of propositions "A" and "B" providing respectively for the

extension of the municipal railway into Ballard and the connection of Division "A" and "C" by motor buses, the municipal railway problem is placed squarely up to the City Council again. Proposition "A" was: "Shall the city purchase and operate auto-cars to connect Divisions 'A' and 'C' of the Seattle Municipal Railways, and incur an expense of not to exceed \$50,000 for such purpose?" The result was 16,799 for, 20,923 against. Proposition "B" was: "Shall the city extend Division 'A' of the city car lines on Leary Avenue and other streets and incur an expense not exceeding \$100,000?" The result was 18,388 for, 19,015 against.

**Service Order in Winnipeg.**—The Manitoba Public Utilities Commission has issued six orders affecting the Winnipeg Electric Railway; the first provides for the purchase of fire hose bridges to be carried by the fire apparatus so as to be available for use by the street cars at all times. The second provides for the regulation of employees' watches. The third provides for the inspection and control of waiting rooms and shelters. The fourth provides for destination signs on the front and sides of cars. The fifth requires that cars going to the carhouses shall be indicated. The sixth order relaxes the previous order relating to the measure of protection to be afforded at the St. James Street subway by directing the installation of the General Railway Signal Company's light signal. The company has asked that the commission reconsider the fourth order.

**Decision Against Duplication of Plants.**—The Supreme Court of California has sustained the right of the California Railroad Commission to refuse the Oro Electric Corporation a permit to do business in Stockton, in competition with the Western States Gas & Electric Company. This decision upholds the authority of the Railroad Commission to prevent destructive competition in the public utility business. The Railroad Commission authorized an interview concerning the decision in which it said: "It means that the policies of the Railroad Commission, based on a State-wide view, cannot be thwarted by purely local considerations, and that henceforth the commission will not necessarily be bound to permit the impairment of an existing public utility service, if it is just and reasonable, by admitting a new public utility into the field unless the interests of the public clearly so require."

**Alien Law Legislation.**—Under an emergency message from Governor Whitman of New York the Senate on March 8 passed the Spring bill repealing the alien clause in the labor law. Before it was placed on final passage, however, the bill was amended so radically that in its final form it provided for amendment rather than repeal of that clause. The Spring bill as modified would provide that preference should be given to citizen labor over alien, whenever citizen labor can be obtained on public contracts. In its original form the bill merely repealed the alien clause in the labor law and left contractors on public works a free hand to employ any sort of labor they desired. On the same day the Supreme Court of the United States made it plain that its injunction of March 4 meant that the Public Service Commission of New York could not interfere with the employment of aliens by the subway contractors and that the contractors even if they employed foreign labor must be paid. The Chief Justice said: "The purpose of this order is to continue in force the injunction provided for in the judgment of the Appellate Division of the Supreme Court of the State of New York and to continue the same in full force until the final decision of this court in this case, or until the same is modified by order of this court." A move was made at Washington on March 8 for the advancement of the hearing in this case. It is expected that a date in April will be fixed by the court.

**National Electric Prosperity Week.**—At a meeting of the Society of Electrical Development, Inc., held on March 4 in New York, definite action was taken in connection with the selection of a committee to have charge of the movement which has been inaugurated for the so-called National Electric Prosperity Week. The chairman, E. W. Lord, and the general manager of the society, J. M. Wakenman, were decided upon to select a nominating committee of five men representing the varied interests who in turn are to select twenty-five men who will represent the central stations, manufacturers, jobbers, contractors, dealers and the technical press. One man from each interest will



# Financial and Corporate

## THE INVESTMENT MARKET

From interviews with prominent banking firms in New York City during the last week it has been ascertained that the general condition of the investment market since Jan. 1 has been more favorable than before, although the market during the last two weeks has been a trifle slower on account of depressing international complications.

There seems to be a ready market for good municipal bonds and a strong demand for railroad and public utility note issues. Since the beginning of the year the electric railway notes sold either in full or in most part, have included the following: Winnipeg Electric Railway, 6 per cent one and two-year notes, \$1,500,000; Pacific Gas & Electric Company 5 per cent one-year gold notes, \$4,000,000, and United Light & Railways Company 6 per cent three-year notes, \$1,500,000. Other short term issues now being placed are Puget Sound Traction, Light & Power Company 6 per cent five-year bonds, \$557,000; Massachusetts Electric Companies 5 per cent three-year gold coupon notes, \$3,000,000, and United Gas & Electric Corporation 6 per cent three-year collateral notes, \$5,500,000. A particular late offering of interest is the \$7,000,000 of 6 per cent two-year gold notes of the Montreal Tramways & Power Company, Ltd. Advices are that most of these have been sold to new holders.

The electric railway bond market has not been as active as the note market during the last two months, but some issues have appeared, such as the Massachusetts Northeastern Street Railway 5 per cent twenty-year bonds, \$707,000; the Middle West Utilities Company 6 per cent ten-year bonds, \$500,000; the Pacific Power & Light Company 5 per cent twenty-year bonds, \$1,052,000, and the New York State Railways 4½ per cent fifty-year bonds, \$3,000,000. The complete sale of the last two issues indicates a strengthening market for the longer issues. This fact is emphasized by the recent placing of \$27,000,000 of New York State canal and highway bonds at a higher premium than expected.

These facts tend to indicate an abundant supply of capital awaiting investment, and it is hoped that the trend toward the absorption of new and attractive offerings is only started. The most striking point in connection with the utility sales thus far, however, is that most of them are for refunding purposes. As yet there is a practically complete absence of financing for new undertakings.

## WATER VERSUS RAIL TRANSPORTATION

The March trade letter of the National Bank of Commerce, Detroit, Mich., sets forth a striking statement of the attitude of the national and state governments in relation to the steam and electric railroad industries as compared to other transportation industries. This bank states that it is sometimes difficult for an observer to understand why the United States and state legislatures bestow favors upon transportation by water through granting liberal appropriations, while at the same time they are busy enacting laws arbitrarily to regulate and tax transportation by land.

New ship channels are opened, old channels and harbors are deepened, additional lighthouses and range lights are established and maintained at the government's expense, and United States engineers are stationed at the leading ports to study and recommend necessary improvements to be made at the expense of the federal government. Instead of making similar appropriations of funds, however, to reduce grades, straighten curves and tunnel mountains or to maintain block signals, the government and the state legislatures reduce passenger fares, increase taxation, enact full-crew laws and through commissions compel improvements to be made at the expense of the railroads.

Furthermore, the national government has created the Interstate Commerce Commission, representing the shipper, to fix rates for the shippers and to see that the railroads, if they earn any money at all, earn no exorbitant amount. This is in great contrast to the practice followed for water-borne commerce, the rates for which are fixed by the companies themselves and are regulated only by competition. This general condition of affairs has caused railroad credit to drop to a low ebb, and the bank wonders whether or not the railroads are receiving a square deal.

be named as chairman of his division. Messrs. Lord and Wakeman then named as a nominating committee John Williams of the Cities Service Company, representing the central stations; Ray D. Lillibridge of the Wagner Electric Company, representing the manufacturers; E. W. Rockefeller of the Western Electric Company, representing the jobbers; J. R. Strong of the Tucker Electric Construction Company, representing the contractors, and Hugh M. Wilson of the *Electrical World*, representing the trade press. This committee will meet to select the steering committee, which will be composed of men prominent in the electrical industry, representing the General Electric, Westinghouse and other large manufacturers, also the leading central stations, jobbers, contractors and dealers of the country.

## PROGRAMS OF ASSOCIATION MEETINGS

### Pennsylvania Street Railway Association

At a meeting of the executive committee of the Pennsylvania Street Railway Association held on March 5 it was decided to hold the spring meeting of the association at Pittsburgh on May 11 and 12. P. N. Jones, general manager of the Pittsburgh Railways, and T. B. Donnelly, claim agent of the West Penn Traction Company, were appointed a committee on arrangements. A committee on the program will be announced later.

### Illinois Electric Railway Association

The next meeting of the Illinois Electric Railways Association will be held on March 19, at the Hotel Morrison, Chicago, Ill. It is announced that papers will be read by J. M. Bosenbury, superintendent of motive power and equipment of the Illinois Traction System, Peoria, Ill., and by Robert M. Feustel, formerly chief engineer of the Illinois Public Utilities Commission. A list of questions regarding operating problems brought up by some of the member companies has been sent out with the announcements of the meeting, which stated that they will be brought up for discussion.

### Western Society of Engineers

At a meeting of the Western Society of Engineers to be held in Chicago on the evening of March 16, 1915, during the week of the convention of the American Railway Engineering Association, the results secured with electrified steam roads will be discussed. W. S. Murray, consulting engineer of the New York, New Haven & Hartford Railroad, will describe the results secured on that road between New Haven and New York, a distance of 74 miles. Edwin B. Katte, chief engineer of electric traction of the New York Central Railroad, New York, will discuss the results secured from electric operation on his road, illustrating portions of his address with lantern slides. R. Beeuwkes, electrical engineer of the Chicago, Milwaukee & St. Paul Railroad, Butte, Mont., will read a paper describing his 440-mile electrification, construction of which is now under way. Several other engineers in charge of similar projects have been invited to take part in the discussion.

### Iowa Street & Interurban Railway Association

The fifteenth annual convention of the Iowa section of the National Electric Light Association will be held in Keokuk, Ia., on April 20, 21 and 22. The annual convention of the Iowa Street & Interurban Railway Association will be held in the same city on April 22 and 23. The Iowa Electrical Contractors' Association will also hold its annual meeting at Keokuk some time during this period. The members of the associations will be the guests of the Keokuk Electric Company and the Mississippi Power Company, Stone & Webster properties, and the entertainment will include a banquet given by the manufacturers and their representatives, followed by an illustrated lecture on the development of the Keokuk Water Power. It is intended to charter one of the large Mississippi River steamboats on the last afternoon of the convention for the purpose of a ride up the Mississippi River. Sessions will be held on the boat in the afternoon, and dinner will be served en route. The return to Keokuk will be made at about 11 p.m. It is not intended to hold a regular electrical show, but space will be provided for any salesmen or manufacturers who wish to display their appliances during the convention.



ANNUAL REPORTS

Twin City Rapid Transit Company

The comparative statement of income, profit and loss of the Twin City Rapid Transit Company, Minneapolis, Minn., for the years ended Dec. 31, 1913 and 1914, follows:

	1914	1913
Revenues:		
Revenue from transportation.....	\$9,227,602	\$8,818,178
Revenue from operations other than transportation .....	72,043	52,158
Total revenues .....	\$9,299,645	\$8,870,336
Expenses:		
Maintenance of way and structures.....	\$419,836	\$394,527
Maintenance of equipment.....	389,660	347,453
Traffic expenses .....	46,579	40,913
Conducting transportation .....	3,170,957	2,923,629
General and miscellaneous .....	811,079	794,119
Total operating expenses .....	\$4,838,111	\$4,500,641
Net operating revenue.....	\$4,461,534	\$4,369,695
Taxes .....	\$593,078	\$586,129
Depreciation .....	994,072	1,060,000
Total taxes and depreciation.....	\$1,587,150	\$1,646,129
Surplus available for fixed charges and dividends .....	\$2,874,384	\$2,723,566
Fixed charges .....	\$986,743	\$975,311
Preferred stock dividends.....	210,000	210,000
Common stock dividends .....	1,250,514	1,206,000
Total fixed charges and dividends.....	\$2,447,257	\$2,391,311
Net income to surplus account.....	\$427,127	\$332,255

By comparison with 1913, the following increases during 1914 were shown: gross revenue, \$429,309, or 4.84 per cent; operating expenses, \$337,469, or 7.5 per cent, and net operating revenue, \$91,839, or 2.10 per cent. The total single-track mileage of the company is 436.72, and the average total single-track mileage operated during 1914 was 418.78. The gross passenger revenue was \$9,194,169, and the gross passenger revenue per single-track mile operated was \$21,955.

During 1914 the company carried 184,352,963 revenue passengers, as compared to 175,895,811 in 1913, and in 1914 the transfers redeemed numbered 66,742,000, as compared to 63,914,277 in 1913. Other statistics for the two years follow: operating percentage (taxes included), 1914, 58.4, and 1913, 57.35; operating percentage (taxes and depreciation included), 1914, 69.09, and 1913, 69.3; percentage earned and paid on preferred stock, 1914 and 1913, 7; percentage earned on common stock (after depreciation charge) 1914, 8.05, and 1913, 7.65; percentage paid on common stock, 1914 and 1913, 6.

The amount expended for new construction during the year was \$1,730,405, and for renewals, \$633,733, or a total of \$2,364,138. New track and extensions totaling 24.34 miles were built and put in operation during the year. Furthermore, ten old cars were retired from service and seventy-nine were put in service.

Louisville (Ky.) Railway

A summary of the annual report of the Louisville (Ky.) Railway for the calendar year 1914 follows:

Transportation revenue (city lines).....	\$3,031,452
Transportation revenue (interurban lines).....	555,887
Revenue from mail, trackage, advertising and power (city lines) .....	135,030
Revenue from mail, trackage, advertising and power (interurban lines) .....	16,390
Gross revenues .....	\$3,738,759
Operating expenses (city lines).....	\$1,796,664
Operating expenses (interurban lines).....	359,514
State, county and city tax for twelve months (city lines) .....	269,558
State, county and city tax for twelve months (interurban lines) .....	31,898
Interest on debt, paid and accrued.....	606,667
Dividend on preferred stock.....	125,000
Total operating expense, fixed charges and preferred dividend .....	\$3,189,301
Net income applicable to common dividends.....	\$549,458

The revenues for the fiscal year were somewhat below those of 1913 on account of the general depressed business conditions. In spite of this fact, however, the usual common dividend of \$545,650 was disbursed from the net income of \$549,458, and \$2,808 was carried forward. On account of

the extensive improvements undertaken during 1913 the company thought it inexpedient to do much along this line during the last year. With the exception of the new shops, therefore, improvements were limited. The whole physical property of the interurban lines was gone over and placed in better condition for future development. Cables and conduits were built and improved during the year, and considerable street and sewer construction work carried on by the city called for outlay by the company for track work. Much of the machinery in the new power house at Twentieth and High Streets was paid for in 1914, this not having been tested and accepted in the preceding year.

Federal Light & Traction Company

The consolidated comparative statement of income, profit and loss of the Federal Light & Traction Company, New York, N. Y., and its subsidiaries for the years ended Dec. 31, 1913 and 1914, follows:

	1914	1913
Gross earnings .....	\$2,416,960	\$2,372,174
Operating expenses and taxes.....	1,498,684	1,443,234
Net earnings (subsidiary companies).....	\$918,276	\$928,940
Federal Light & Traction Company.....	29,623	36,640
Total income .....	\$888,653	\$892,300
Interest charges .....	586,155	531,787
Central Arkansas Railway & Light Corporation dividend .....	84,000	63,000
Federal Light & Traction Company dividend .....	112,500	150,000
Net income .....	\$105,998	\$147,513

Depreciation charges and inter-company earnings, expenses and interest charges are not included in the foregoing statement. During 1914 the gross earnings of the subsidiary companies increased \$44,786, or 1.9 per cent, but the operating expenses and taxes decreased \$55,450, or 3.8 per cent. The net earnings of subsidiary companies therefore decreased \$10,664, or 1.1 per cent. The earnings of the holding company, however, increased \$7,017, so that the total income decrease was only \$3,647, or 0.4 per cent. Interest charges increased \$54,368 and the Central Arkansas Railway & Light Corporation dividend \$21,000, while the Federal Light & Traction Company dividend decreased \$37,500. Hence the net income decreased \$41,515, or 28.1 per cent.

Albany Southern Railroad

The gross operating revenues of the railway and lighting departments of the Albany (N. Y.) Southern Railroad for the fiscal year ended June 30, 1914, were \$507,048, or 1.97 per cent. The operating expenses, including taxes, amounted to \$381,972, an increase of 13.9 per cent, leaving a net operating revenue of \$125,076, a decrease of 22.8 per cent. Retirements and replacements and other adjustments chargeable to fixed capital during the year amounted to \$13,069, and the surplus was adjusted accordingly.

During the year the railway department of the company suffered diminishing traffic and increased public demands. When the company attempted to meet the decrease in traffic by cutting down a number of trains, complaint was made to the Public Service Commission and the company was obliged to replace the trains taken off. The company on March 27 put into effect an increase in rates, which was also taken before the Public Service Commission. The officers of the company believe that they can maintain the increase as just and equitable. The last winter was one of unusual severity on account of snow and floods. For maintenance the company spent \$55,864, or 11 per cent of the gross operating revenue. The increase of \$53,853 in operating expenses was caused by the increase of \$16,142 in the cost of conducting transportation, and an increase of \$13,149 in general and miscellaneous expenses on account of larger accruals for accidents and damages. In construction and new work in this department the company expended \$71,856 during the year. This amount represented one new fifty-ton locomotive, two new steel passenger cars, five new passenger car equipments, paving, new track work and other miscellaneous improvements.

The report emphasizes the fact that the officers are bending every effort to secure equitable tax assessments on the property of the company. Last year the taxes amounted to \$44,400, or 8.7 per cent of the gross operating revenue.



Slight reductions in the assessments recently filed indicate that the company is beginning to receive some recognition of the unfairness of the assessments. The actual taxes assessed against the property and paid in the last fiscal year represent an increase of more than 100 per cent within seven years.

### EARNINGS OF WASHINGTON COMPANIES

The fourth annual report of the Public Service Commission of Washington, covering the period from Sept. 1, 1913, to Nov. 30, 1914, is mostly devoted to reports of cases decided by the commission and reprints of orders issued by it. During the year the commission disposed of 466 formal complaints and issued 411 formal orders, as compared to 428 and 393 in the preceding period. This is the first report of the commission to contain any financial statements for electric railways in the State. No comparative figures for

commission, and that it was only an engineering estimate. As to the commission's valuation, the decision of the commission says:

"It can fairly be said to be an exhaustive report, and while it is, of course, possible that the final determination of value may increase the figures submitted therein, the commission is not convinced that a showing can be made of a value of applicant's plant equal to the face value of its outstanding bonds."

The commission in its investigation found itself hampered by the absence of many important books of the predecessor companies. In this regard the commission expressed itself as follows:

"The explanation was made that these books had been burned, as it was thought that their usefulness had ended. This does not appear to be a valid explanation. Any man who has served a big public service corporation as long in

TABLE SHOWING MILEAGE AND FINANCIAL FIGURES FOR ELECTRIC RAILWAYS IN WASHINGTON FOR YEAR ENDED JUNE 30, 1914

Name of Company	Total Mileage Operated	Total Operating Revenue	Total Operating Expense	Net Operating Revenue	Total Taxes Paid	Total Number of Passengers Carried	Average Fare per Passenger
Grays Harbor Railway & Light Company.....	11.94	\$124,300	\$76,473	\$47,827	\$8,280	2,526,469	04.713
Loyal Railway .....	1.75	.....	7,739	475	.....	.....	.....
Olympia Light & Power Company.....	6.03	37,190	30,713	6,476	5,100	780,034	04.806
†Pacific Northwest Traction Company.....	77.47	471,093	232,399	238,694	37,286	1,327,653	26.999
‡Pacific Traction Company.....	24.37	88,305	68,950	19,354	2,738	1,868,875	04.887
Puget Sound Electric Company.....	65.51	500,632	363,337	137,294	69,633	2,413,055	14.003
Puget Sound International Railway & Power Company...	22.06	203,233	137,104	66,128	40,834	4,056,659	58.29
††Puget Sound Traction, Light & Power Company.....	228.66	3,926,517	2,079,668	1,846,849	601,645	106,214,389	04.658
Seattle, Renton & Southern Railway.....	24.54	286,728	197,326	89,401	31,596	6,320,641	04.134
Spokane & Inland Empire Railroad.....	290.42	1,531,650	1,062,704	468,946	150,000	13,762,819	08.289
Tacoma Railway & Power Company.....	108.06	1,049,659	709,549	340,110	82,358	25,196,765	04.996
Walla Walla Valley Railway .....	26.50	128,946	91,764	37,182	7,264	1,655,414	06.519
Washington Electric Railway.....	7.20	1,918	2,107	*188	530	.....	.....
†††Washington-Oregon Corporation .....	20.18	100,857	78,012	22,844	26,154	1,342,664	06.917
Washington Water Power Company, city lines.....	52.39	803,870	761,983	41,887	67,320	18,495,294	04.923
Washington Water Power Company, interurban lines...	23.89	102,785	95,915	6,870	4,390	255,557	02.951
Western Washington Power Company.....	5.60	30,478	25,401	5,077	566	535,588	04.935
Willapa Electric Railway.....	5.44	33,656	15,998	17,657	2,109	.....	.....
Yakima Valley Transportation Company.....	39.19	142,800	117,416	25,383	6,583	2,351,978	04.617

\*Deficit.

†Includes Seattle-Everett Traction Company and Whatcom County Railway & Light Company.

††Includes Seattle Electric Company.

†††Includes Twin City Light & Power Company and Vancouver Traction Company.

the preceding year are available to indicate the business condition in the Northwest, but the operating results for the year ended June 30, 1914, are shown by the accompanying table.

### LOS ANGELES TRANSFER DENIED

#### Commission Refuses Permission for Los Angeles Railway Corporation and City Railway of Los Angeles to Transfer Properties to The Los Angeles Railway

The California Railroad Commission has issued an order denying the application of the Los Angeles Railway Corporation and the City Railway of Los Angeles for authority to transfer their properties to The Los Angeles Railway. The order provides, however, that the companies may at a later date submit a modification of the present application. Previous references to this application were made in the ELECTRIC RAILWAY JOURNAL of Jan. 31 and Sept. 12, 1914.

Embodied in the present application was a request of The Los Angeles Railway for authority (1) to issue common stock to the par value of \$20,000,000 in exchange for \$20,000,000 of the capital stock of the Los Angeles Railway Corporation and \$5,000,000 of the capital stock of the City Railway of Los Angeles; (2) to execute a mortgage of its properties, and (3) to issue bonds to the face value of \$23,544,000 to be exchanged for bonds of the Los Angeles Railway Corporation and of the City Railway of Los Angeles, on outstanding bonds issued by these.

The main question at issue in the application was the value of the two operating companies as compared to the \$23,544,000 of bonds to be issued. A valuation of the properties was undertaken in connection with the application, and various estimates of depreciated reproduction value were made, as follows: By the City of Los Angeles, as of Jan. 1, 1913, \$14,782,112; by the Los Angeles Railway Corporation, as of Dec. 1, 1913, \$24,579,566, and by the engineering department of the commission, as of Dec. 1, 1913, \$19,747,767. With regard to the figures submitted by the city of Los Angeles, the engineers who prepared the report stated that it was not prepared for presentation to the

an official capacity as have certain of the officials of these applicants, either did know or ought to have known the extreme importance of preserving corporate records. The conclusion is justified, therefore, that these books were either destroyed or allowed to be destroyed in order to avoid a public revelation of their contents."

American Cities Company, New York, N. Y.—At the recent annual meeting of the American Cities Company, S. J. Dill, C. H. Hardy, D. D. Curran, Edwin B. Parker and Walter G. Weiss were elected directors to succeed Irving Bonbright, A. J. Hemphill and S. Z. Mitchell, retired, and W. W. Kavanaugh, deceased, and to fill a vacancy.

Aurora, Elgin & Chicago Railroad, Wheaton, Ill.—Cassatt & Company, R. M. Stinson & Company and Henry & West, Philadelphia, are placing at 98½ and interest, to yield 6.5 per cent, \$800,000 of three-year 6 per cent collateral trust notes of the Aurora, Elgin & Chicago Railroad. These notes are dated March 1, 1915, and are due on March 1, 1918, being redeemable before maturity at graded premiums from 101 down to 100¼. They are secured by deposits with the trustee of \$1,067,000 of first and refunding mortgage 5 per cent bonds, due 1946, which are a lien on all the property of the company, and upon retirement of an issue of Elgin, Aurora & Southern Traction Company 5's due on June 1, 1916, will become a first mortgage on one-half of the entire property. Following these notes is \$3,100,000 of preferred stock giving 6 per cent dividends and the same amount of common stock. The authorization of this issue was noted in the ELECTRIC RAILWAY JOURNAL of Feb. 20.

Central Park, North & East River Railroad, New York, N. Y.—The separate answer of the executors of the estate of Thomas Dolan to the suit against Mr. Dolan, P. A. B. Widener and George W. Elkins, in which they are charged with wasting more than \$2,000,000 of the assets of the Central Park, North & East River Railroad, was filed on March 5 in the United States District Court in Philadelphia. The principal points of the defense are that these men were not directors during the years when it is alleged they were guilty of neglect of duty; that the transactions complained



of as being illegal were ratified by the stockholders of the company when negotiations were being made, and that the statute of limitations of both New York and Pennsylvania bar such claims as presented in the suit (which are denied as a whole). The establishment of the minority stockholders' right to sue the directors was noted in the ELECTRIC RAILWAY JOURNAL of Jan. 16.

**Chicago (Ill.) Elevated Railways.**—The Chicago Elevated Railways has deferred action on the quarterly dividend of 1½ per cent on the preferred participation shares, due March 1. Similar action was taken on the Sept. 1 and Dec. 1, 1914, payments. Officials of the company say that the preferred dividend was passed March 1 because the surplus earnings of the company this year are being used for improvements. The gross earnings of the company for the first two months of 1915 were 1 per cent more than for the first two months of 1914. The outlook is now said to be quite promising.

**Fairmount Park Transportation Company, Philadelphia, Pa.**—Samuel M. Clements, Jr., and William L. Chrisman, two members of the reorganization committee of the Fairmount Park Transportation Company, were recently appointed temporary receivers for the company by the United States District Court. On March 8 the appointments were made permanent. It is stated that the proceeding is an amicable one, in order to carry out the reorganization plan of the company. The details of this plan and its acceptance by the stockholders were noted in the ELECTRIC RAILWAY JOURNAL of Jan. 16, Feb. 27 and March 6.

**Fort Wayne & Springfield Railway, Decatur, Ind.**—Pursuant to a judgment and decree of the Adams Circuit Court of Adams County, Ind., French Quinn, receiver of the Fort Wayne & Springfield Railway, will offer the property of the company for sale on May 4 at the court house in Decatur. The sale is to be free of liens except taxes and the Calhoun Street improvement assessment in Fort Wayne. All bids must be accompanied by a deposit of \$1,000 in cash or by certified check.

**Hudson & Manhattan Railroad, New York, N. Y.**—The directors of the Hudson & Manhattan Railroad have declared an interest payment of 1 per cent on the company's adjustment income bonds for the six months ended Dec. 31, 1914, payable on April 1 at the office of Harvey, Fisk & Sons. This is the same interest rate that was used for previous half-years.

**New York (N. Y.) Railways.**—The arbitrators who will decide the amount of interest to be paid on the New York Railways adjustment income 5 per cent bonds for the six months ended Dec. 31, 1914, are H. H. Porter, of Sanderson & Porter; James Marwick, of Marwick, Mitchell, Peat & Company, and W. G. Ross, one of the directors of the Montreal (Que.) Tramways. Mr. Porter was chosen by the New York Railways, Mr. Marwick by the trustee of the mortgage, and Mr. Ross, the third arbitrator, by the first two. These are the same experts who arbitrated the question of interest last year. The payment on the bonds for the last half of 1913 was 2.345 per cent, and the total for the year was 3.98 per cent, while the rate for the first six months of 1914 was 1.288 per cent.

**Petaluma & Santa Rosa Railway, Petaluma, Cal.**—The annual report of the Petaluma & Santa Rosa Railway for the year ended Dec. 31, 1914, shows that the gross earnings decreased from \$303,645 to \$298,224, while the operating expenses increased from \$202,621 to \$213,783, consequently giving a decrease in net earnings from \$101,023 to \$84,440. The fixed charges rose from \$58,221 to \$60,421, so that the surplus dropped from \$42,801 to \$24,018. A fire loss of \$14,138 in 1914, and other adjustments, further reduced that year's surplus to \$11,017. During the year the railway passengers increased from 733,538 to 757,759 and the freight from 61,968 tons to 70,265 tons.

**Public Utilities Company, Evansville, Ind.**—Announcement has been made by the Public Utilities Company, which is the assignee and vendee of the Evansville & Princeton Traction Company, that the trustees under the mortgage of April 1, 1903, will on April 1, 1915, at the office of the Citizens' Saving & Trust Company, Cleveland, receive at 105 and accrued interest, bonds 71 to 80, inclusive, issued by the Evansville & Princeton Traction Company.

**United Railways Investment Company, San Francisco, Cal.**—The directors of the United Railways Investment Company have changed the fiscal year of the company to start with July 1, and the annual meeting this year will be held in October instead of May. This will enable the company to issue its annual report in consolidated form for itself and its subsidiaries. A balance sheet and an income statement for the year ended Dec. 31, 1914, will be sent to stockholders this month, but the complete pamphlet report will not be issued until October.

**DIVIDENDS DECLARED**

Arkansas Valley Railway, Light & Power Company, Pueblo, Col., quarterly, 1¾ per cent, preferred.  
 Brazilian Traction, Light & Power Company, Toronto, Ont., quarterly, 1½ per cent, preferred.  
 Brockton & Plymouth Street Railway, Plymouth, Mass., 3 per cent, preferred.  
 Cleveland (Ohio) Railway, quarterly, 1½ per cent.  
 Columbus Railway, Power & Light Company, Columbus, Ohio, quarterly, 1½ per cent, preferred, series A.  
 New York State Railways, Rochester, N. Y., quarterly, 1¼ per cent, preferred; quarterly, 1 per cent, common.  
 Twin City Rapid Transit Company, Minneapolis, Minn., quarterly, 1¾ per cent, preferred; quarterly, 1½ per cent, common.  
 United Light & Railways Company, Grand Rapids, Mich., quarterly, 1½ per cent, first preferred; quarterly, three-quarters of 1 per cent, second preferred.  
 United Traction & Electric Company, Providence, R. I., quarterly, 1¼ per cent.  
 West End Street Railway, Boston, Mass., \$1.75.  
 Wisconsin-Minnesota Light & Power Company, Eau Claire, Wis., quarterly, 1¾ per cent, preferred.

**ELECTRIC RAILWAY MONTHLY EARNINGS**

AURORA, ELGIN & CHICAGO RAILROAD, WHEATON, ILL.						
Period	Gross Earnings	Operating Expenses	Net Earnings	Fixed Charges	Net Surplus	
1m., Jan., '15	\$144,145	*\$136,100	\$8,045	\$2,989	\$5,056	
1 " " '14	152,762	*142,642	10,119	347	9,772	
7 " " '15	1,241,521	*1,060,747	180,775	24,670	156,105	
7 " " '14	1,289,952	*1,058,040	231,912	2,429	229,483	
CITIES SERVICE COMPANY, NEW YORK, N. Y.						
1m., Jan., '15	\$425,900	\$12,929	\$412,972	\$40,833	\$372,139	
1 " " '14	414,759	3,586	411,174	29,167	382,007	
12 " " '15	3,945,594	126,251	3,819,344	431,667	3,387,677	
12 " " '14	2,417,181	83,215	2,333,966	152,229	2,181,737	
CLEVELAND, SOUTHWESTERN & COLUMBUS RAILROAD, CLEVELAND, OHIO.						
1m., Jan., '15	\$93,315	\$59,158	\$34,157	\$32,053	\$2,104	
1 " " '14	94,052	60,141	33,911	31,895	2,016	
HUDSON & MANHATTAN RAILROAD, NEW YORK, N. Y.						
1m., Dec., '14	\$489,345	*\$194,720	\$294,626	\$33,648	\$260,978	
1 " " '13	502,473	*209,909	292,564	37,458	255,106	
6 " " '14	2,715,265	*1,117,709	1,597,556	208,283	1,389,274	
6 " " '13	2,741,203	*1,171,218	1,569,985	201,263	1,368,722	
INTERBOROUGH RAPID TRANSIT, NEW YORK, N. Y.						
1m., Jan., '15	\$2,878,732	\$1,327,436	\$1,551,296	\$912,571	\$638,725	
1 " " '14	2,933,870	1,312,684	1,621,186	912,671	718,515	
7 " " '15	19,149,137	8,731,614	10,417,523	6,372,390	4,376,309	
7 " " '14	18,933,323	8,698,179	10,235,144	6,580,797	4,025,339	
NORTHERN OHIO TRACTION & LIGHT COMPANY, AKRON, OHIO.						
1m., Jan., '15	\$280,839	\$181,979	\$98,860	\$65,758	\$33,102	
1 " " '14	270,961	171,291	99,670	64,034	35,635	
NORTHERN TEXAS ELECTRIC COMPANY, FORT WORTH, TEXAS.						
1m., Dec., '14	\$162,561	*\$87,543	\$75,018	\$28,698	\$46,320	
1 " " '13	184,876	*102,572	82,304	24,052	58,252	
12 " " '14	2,071,099	*1,151,237	919,861	317,503	602,358	
12 " " '13	2,132,200	*1,179,941	952,259	286,918	665,341	
PENSACOLA (FLA.) ELECTRIC COMPANY.						
1m., Dec., '14	\$20,107	*\$12,608	\$7,499	\$7,251	\$248	
1 " " '13	26,291	*15,020	11,271	7,062	4,209	
12 " " '14	264,841	*168,793	95,048	86,728	8,320	
12 " " '13	285,758	*182,738	103,020	81,102	21,918	
PUGET SOUND TRACTION, LIGHT & POWER COMPANY, SEATTLE, WASH.						
1m., Dec., '14	\$717,550	*\$415,775	\$301,776	\$177,741	\$124,035	
1 " " '13	790,307	*435,126	355,181	174,407	180,774	
12 " " '14	8,450,974	*5,007,008	3,443,966	2,118,856	1,325,110	
12 " " '13	8,613,599	*5,008,375	3,605,224	2,063,019	1,542,205	
TWIN CITY RAPID TRANSIT COMPANY, MINNEAPOLIS, MINN.						
1m., Jan., '15	\$769,292	\$531,540	\$237,752	\$53,000	\$184,752	
1 " " '14	746,006	493,609	252,397	49,615	202,782	

\*Includes taxes. †Includes other income.



# Traffic and Transportation

## THE "JITNEY" BUS

### Cities and Legislatures Striving for Adequate Regulatory Measures—The "Jitney" Finishes Its Sweep of the Country in Less Than Four Months

The features that stand out prominently this week in connection with developments involving the "jitney" are the veto by the Mayor of Los Angeles of the regulatory measure there and the decision of Judge W. A. Sloane of the Superior Court at San Diego denying the application of the city for an injunction against the Red Star Auto Bus Company and holding that buses are not required to obtain a franchise in San Diego although subject to regulation by ordinance.

The much-revised ordinance to regulate the operation of "jitney" buses in Los Angeles was passed unanimously by the City Council on Feb. 27. On March 3, Mayor Rose vetoed the ordinance, holding that the measure was insufficient and not fully calculated to remedy traffic conditions. The ordinance did not limit the fare to 5 cents. This was regarded as due to the comment of Councilman Conwell, who said: "It is a physical impossibility to operate the cars (the 'jitney' buses) at a profit. The owners tell us that the passengers on the running boards are the profits of the business. The truth is that these passengers are a loss, for they destroy the light cars and cause an expense in repairs and maintenance that would greatly offset the gross revenue. The 'jitney' is here to stay, but its mission is rapid transit de luxe and not a 5-cent proposition."

The Los Angeles ordinance provided in short that permits should be secured from the Police Commissioners; that all applicants take examinations and demonstrate their ability properly to handle cars in the congested districts and give bond in the sum of \$5,000; that drivers file photographs of themselves for identification; that all permits set forth routes; that drivers be permitted to deviate three blocks either way to deliver passengers to their homes; that all buses be equipped with non-skid tires and with non-skid chains in wet weather; that in congested districts buses stop 50 ft. from street intersections to discharge or take on passengers and 75 ft. at intersections where street cars turn on or off the street; that the interior of buses be lighted; that regulation signs be carried, showing the route and fares charged; that passengers be permitted to stand on the running board next to the driver's seat; that no color line be drawn, and that hand baggage be held in the laps of passengers.

In his veto message Mayor Rose said that 2093 rent permits for automobiles and 2487 public chauffeur licenses had been issued since April 17, 1914. Before the "jitney" bus started in Los Angeles the total number of automobile permits issued was 350. On Dec. 31, 1914, 600 "jitney" bus permits were not renewed. Since Jan. 1, 1915, 300 had dropped out of business. There were permits, however, at the present time for 700 "jitney" buses. He said that these buses averaged 130 miles a day, which meant about sixteen one-way trips during the rush hours when the traffic was heaviest. In round numbers this meant 11,200 trips every day, equivalent to adding 11,200 vehicles during rush hours to streets already choked with traffic pertinent to the business conducted upon the streets. It seemed to him extremely unfair and unjust to the merchants and taxpayers to inflict this additional burden upon the thoroughfares without their consent, against their wishes and greatly to their detriment. The Mayor recommended the amendment of the ordinance so as to increase the indemnity bond from \$5,000 to \$10,000 for the reason that while \$5,000 might possibly recompense one injured person there was no assurance that injury would be confined to one or even two persons. He further recommended that in the event of the passage of a "jitney" bus ordinance, a special commission should be created to examine applicants for permits.

As previously stated, Judge Sloane at San Diego held that "jitney" buses operating along the streets of that city were not required to obtain a franchise from the city. Judge Sloane held in short that the "jitney" bus does not actually appropriate any part of the highway which it

traverses and that it is not therefore subject to the present franchise law. He admitted the power of the Legislature to enact a law giving municipalities the right to require franchises, but said this power was not now vested in the municipalities. He said in this connection:

"It appears to me that the city of San Diego has ample authority under its police power to place practically every restriction and requirement upon the auto bus traffic that would be available under the limitations of a public franchise."

In conclusion the Judge said:

"It would seem, therefore, to be well within the province of the police powers of the city of San Diego to regulate the traffic on the streets not only to avoid congestion and maintain a proper distribution of travel, but to promote and preserve the highest efficiency and safety in the matters of public transportation."

Another important development in connection with the move for the regulation of the bus was the hearing before the Massachusetts Legislative committee on mercantile affairs held on March 4 upon the bill introduced by the Massachusetts Street Railway Association to license private bus lines and place them under the jurisdiction of the Public Service Commission. Bently W. Warren, counsel for the association, outlined the features of the bill, which was summarized in the *ELECTRIC RAILWAY JOURNAL* of Jan. 30, 1915, page 258. The bill provides for licensing automobiles carrying eight or more passengers for hire and secures recovery for damages to passengers, through the jurisdiction of the Massachusetts Highway Commission. A road tax is also included, graduated according to weight. Mr. Warren pointed out that the electric railways represented in the Massachusetts Association desired protection against irresponsible agents of transportation and touched upon the menace of the "jitney" to existing transportation companies, which are responsible agents and cannot do a hazardous business. If the street railway could pick its own hours for operating as the "jitneys" do, the railways would not be seeking legislation. He suggested that if committees could not find time to go into the matter thoroughly before the close of the present session, it might be well to call for an investigation by a recess committee or special commission, with report at the next session. Many representative business men also appeared. In general the speakers declared that they were satisfied with the existing electric railway service in their communities; that the entrance of the "jitney" had proved a menace to the safety of the public, and that the operators of the "jitneys" should be held rigidly responsible in attempting to perform the duties of common carriers.

The demand for proper regulation has been extremely insistent elsewhere. Besides the bill introduced into the Legislature of Indiana and lost, and the bill introduced into the Massachusetts Legislature, just referred to, measures have appeared in the Kansas and the New York Legislatures. The original "jitney" bill in the Kansas Legislature was killed by the railroad committee of the Senate after having successfully passed the House. This measure, amended, has been revised and is expected to be reported out of committee and put on the calendar. In connection with the bill introduced in the Legislature of New York on March 5 it may be recalled that in the annual report of the Public Service Commission for the Second District of New York that commission recommended that auto buses be removed from regulation by it, saying that "a year's experience with auto bus lines has convinced us that the law making them common carriers and subject to the regulations of the commission should be repealed." In this connection the commission said that 142 applications for certificates of public convenience and necessity for these lines had been made to the commission up to Jan. 1 and that not one of them, when the application was in proper form and when the route lay over State or county highways, had been denied. The measure now before the Legislature introduced by Senator Thompson prohibits a belt line, stage route, vehicle line or any vehicle carrying passengers at the rate of fare of 15 cents or less for each passenger, within the limits of a city, or in competition with another common carrier which is required by law to obtain the consent of the local authorities of a city to operate over the streets of such city from operating over any street in any city, except New



York City, or from receiving a certificate of public convenience and necessity until the owners of such routes or lines shall have procured, after public notice and hearing, the consent of the local authorities of the city.

It is reported generally that a bill is to be introduced into the State Legislature of Tennessee providing for a State tax of \$150 annually on each "jitney" bus operated in Tennessee. Of the proposed tax it will probably be provided that \$50 shall go to State highway fund, \$50 to the county road fund, and \$50 to the city street fund.

The ordinance providing rigid restrictions for "jitney" automobiles and buses has been passed to third reading by the City Council of Portland, Ore. It provides for the regulation of "jitneys" until Sept. 1 on a license or permit basis. After Sept. 1 the measure stipulates as a requirement a franchise from the city if they continue in operation. The special licenses which are to be required will permit the operation on the one route. Licenses are to be revoked for cause. The route is to be designated and operation on other streets is to be prohibited. Streets to be used for "jitneys" are, as far as possible, to be unoccupied by street cars. Changing of routes by any "jitney" driver can be made only on written application sent to the Commissioner of Public Utilities, who is empowered to refuse to license a driver when additional bus service appears not to be needed. The "jitney" must operate continuously every day from 6 a. m. to 12 o'clock midnight except Sundays, when service may start at 7 a. m. The rate of fare is to be not more than 5 cents. No car is to carry passengers in excess of the seating capacity. License fees of \$5 a month for a car carrying eight or fewer passengers and \$10 a month for a car carrying more than eight passengers are to be collected monthly. A bond for the protection of passengers is to be exacted. The route of each car is to be painted on the windshield and on each side of the car. A fine of not more than \$200 or ninety days in jail is to be exacted for violation of the ordinance.

In Louisville the finance committee of the lower board of the General Council is considering an ordinance which would fix licenses to be paid by owners and drivers of buses. According to the first chapter of the measure any person, firm or corporation engaged in the business of carrying passengers via automobiles or other power-driven vehicle in Louisville or who should use his automobile or other power-driven vehicle for such purpose must procure a license for each vehicle. The fee is fixed at \$25 a year for a vehicle of a capacity of not less than two or more than six passengers, at \$35 for a vehicle with a seating capacity of not less than seven or more than ten passengers, and \$50 for vehicles with a seating capacity of more than ten passengers. License tags are to be conspicuously attached to each car. Penalties to be assessed for violations of the measure range from \$5 to \$10 for each offense.

In Nashville, Tenn., a "jitney" regulatory measure has passed the Board of City Commissioners on its third reading. It contains a number of provisions that are restrictive in the extreme. A license fee of \$60 is required. Applicants must first undergo an examination as to their ability and the condition of their cars. Each license holder must deposit a \$5,000 insurance policy with the city. Drivers must not smoke or drink intoxicants while on duty, and in cases of a special attraction not more than half of the cars regularly run on any route may be deviated to that service. A maximum fare of 5 cents is allowed and each car must bear a sign indicating in plain letters the route it traverses. To secure a license to operate an automobile and carry passengers, the driver must be eighteen years of age.

The licensing of cars under the new ordinance passed at Fort Worth, Tex., was begun immediately after the measure went into effect. Up to the time the new ordinance became effective 269 "jitney" licenses had been issued.

Recent developments in the public discussion of the ordinance to regulate "jitneys" now pending before the Council of Atlanta, Ga., would seem to indicate conclusively that the real influence behind the spread of the movement is the automobile interests, focused by local dealers, agents and branch managers. Many of these latter are advertisers and the newspapers appear to be sympathetic for their welfare.

The "jitney" has apparently completed its sweep of the

country. Starting in Los Angeles the movement spread north and south simultaneously, cars appearing in the States of Washington and Texas about the same time. Then came the invasion of the Southern states, cars appearing in New Orleans, Birmingham, and other cities. The spread of the "jitney" idea is perhaps best instanced by reference to the "jitney" bus item which appeared in the *ELECTRIC RAILWAY JOURNAL* of Nov. 28, 1914. The correspondent of the *ELECTRIC RAILWAY JOURNAL* at San Francisco said in substance at that time that there had recently been an enormous increase in the number of privately owned automobiles that solicit fares at 5 cents each on the streets of Los Angeles and that the public utilities committee of the city announced it would hold a public hearing on Nov. 27 to consider the matter. Since then the development has been followed from week to week in the *ELECTRIC RAILWAY JOURNAL*.

Among the cities "Farthest North" that report the installation of "jitney" bus services are Erie, Pa., Buffalo, N. Y., Rochester, N. Y., Portland, Me., and Toronto, Ont. In the South, Richmond is among the additional cities which have been invaded. A few days ago it was announced that the "jitney" service in St. Louis would be augmented by twenty-five "jitneys" placed in operation by the St. Louis Rapid Transit Company, under the supervision of Lee Massingale, for many years associated with the United Railways.

That the service of the "jitneys" broke down lamentably during the recent storm in the Central West is instanced by the report received from the Kansas City correspondent of this paper. The Metropolitan Street Railway of that city had to contend with a fall of snow totaling more than 1 ft. on the evening of March 4 and the following day. There was interruption of traffic early in the evening on some lines, but sweepers kept the tracks clear during the night. On March 5 the greatest difficulty was in the wagon and automobile traffic that obstructed the center of the street where the street railway had cleared the way. The Park Board had cleared many of the boulevards, but snow piled at intersections caused most traffic to stick to the street railway track. The storm kept the "jitneys" indoors during the afternoon and evening of March 4, and on the morning of March 5 only a few of the small cars and none of the large ones ventured out. When the cars did begin to reappear they made for the spaces cleared by the street railways. In this connection the following account from the *Kansas City Journal* of March 5 will be appreciated:

"The heavy fall of snow yesterday and last night did not seriously disarrange the schedules of the 'jitney' service. Those who feared that the drifting snow would make the streets impassable for the cars were unaware of the resourcefulness of the 'jitney' management. As soon as the drifts began to impede the progress of the 'jitneys,' heavy fourteen-cylinder motor trucks, with revolving sweeper attachments, were brought into service and the routes traversed by the different 'jitneys' were soon swept clean. The sweepers were followed by sand sprinkling cars, and inclines and curves were heavily sanded to prevent skidding.

"While passengers shivered in the movable dungeons operated by the soulless Metropolitan Street Railway, it was a pleasure to note that the 'jitneys' maintained a degree of summer heat through the use of electric warmers and toasters. The 'jitney' has again demonstrated that neither rain, nor hail, nor snow, nor callous criticism can keep it in its cozy garage. It can traverse the rain-flooded streets like a duck across a placid pond and it can negotiate a snowdrift like a Norwegian on skis. It is warm in winter, cool in summer, and a joy and a delight forever. If the Metropolitan Street Railway management would desist from sowing the streets with tacks and horseshoe nails and broken glass the 'jitney' management might say, with the late lamented Mr. Dana:

"We may be happy yet,  
You bet."

This story was headed "As Written by A. Ananias—Being a Reversed English Account of the 'Jits' and Snow."

Fixed responsibility in the "jitney" bus business, so far as it applies to cities of the first class, is provided in a bill backed by the road and bridges committee which passed the Washington House on March 1. The new act requires a



bond of \$1,000 to be filed with the Secretary of State upon application for a license, for which a fee of \$5 will be charged. No other fee will be exacted during the life of the bond. The bill in no way interferes with future control of the "jitneys" by municipal authorities. The first section of the bill makes it unlawful for any person, firm or corporation, other than a steam, street or interurban railway to transport passengers for hire in any motor propelled vehicle on any public street or highway within the corporate limits of a city of the first class without having first obtained a license.

The auto bus line in Jamaica, L. I., which is included in the Borough of Queens, Greater New York, has suspended service. Jamaica has a population of approximately 100,000 people and it is an important terminal and junction point on the Long Island Railroad. It is served by the lines of the Brooklyn Rapid Transit Company, the New York & Queens County Railway and the Manhattan & Queens Traction Corporation, but the service of all of these lines is through service rather than local. The grant by the New York Board of Estimate of a franchise to the Jamaica bus line was an experimental one, and two cars were operated in a purely local Jamaica service. The line, according to reports, has never succeeded in paying even its running expenses, the operations being handicapped by insufficient equipment.

### BROOKLYN TRANSIT INQUIRY

D. A. Marsh, of counsel for the Brooklyn (N. Y.) Heights Railroad and other surface companies involved in the Public Service Commission's investigation predicated upon the report of Joseph Johnson, chief of the transit bureau of the commission, made his final argument on March 8 before the commission, summing up the testimony and the company's contentions in the case. Mr. Marsh presented to the commission a brief in which he said:

"The companies protest on behalf of their stockholders that the present investigation has been wholly superficial and is entirely inadequate as a basis on which to frame a general service order which may jeopardize the corporate property and may even spell financial ruin to those corporations.

"Experienced railroad men, and, we believe, competent men, are doing their level best to give the best possible service in Brooklyn under existing conditions. This has been publicly admitted by at least two of the members of this commission who had sufficient backbone to face criticism and express their honest convictions. It may be interesting to the commission to know that E. G. Connette, president of the International Railway, Buffalo, and formerly in the employ of the commission, in a recent address is reported to have stated, in justification of the service given on his road, as follows: 'With the exception of Brooklyn, we have the most scientific schedule of any road in the country.'

"The transit bureau admitted upon the hearing that in making up its report it had considered neither the effect of the new rapid transit lines now under construction, the variations in travel resulting from the new transfer system, nor the question whether the company was financially able to furnish the service proposed in the report. Neither had standards of service elsewhere been taken into consideration.

"The new transfer system went into effect on June 1, 1914, giving practically universal transfers at all intersections, including the lines of the Coney Island & Brooklyn Railroad, which was a short time before made a part of the Brooklyn Rapid Transit System. As a result of this new transfer system the travel immediately began to shift, and is still shifting."

The December Grand Jury, which had been investigating the Brooklyn Rapid Transit Company, reported to County Judge Hylan on March 6, roundly censured the Public Service Commission, and referred to the instances of inadequate service, but it failed to indict. Judge Hylan said: "If the conditions in this borough do not improve, I shall get the evidence and present it to some future Grand Jury. You must not think I regard your investigation as a fruitless one. The Public Service Commission has been stirred into action; the legislative committee has investigated and the health department has also taken action."

### IMPORTANT INTERCHANGE DECISION

The United States Supreme Court, in a decision handed down on March 8, upheld the order of the Michigan Railroad Commission to require the Michigan Central Railroad to make a physical connection with the interurban line of the Detroit United Railway at Oxford, Mich. The decision is interpreted to mean that the Railroad Commission has authority to order physical connections and the interchange of traffic between steam and electric lines throughout the State, a power which has been questioned by the steam railroads up to this time. There are a number of places in the State where physical connections of this kind are desired by shippers in order to facilitate the handling of freight and it is expected that application for such connection where practicable will be made by interested shippers. The electric line affected by the decision runs from Detroit to Flint, and from Oxford to Flint it has been equipped with water tanks and other necessities for locomotive use in order that locomotives may be operated on the division if necessary. The line is suitable for freight car operation in that it runs on private right-of-way entirely except through the villages en route.

### CHICAGO SERVICE ORDINANCE

A service standard ordinance for non-rush hours, the provisions of which were printed in the *ELECTRIC RAILWAY JOURNAL* of March 6, page 486, has been passed by the Chicago City Council. In compliance with the findings of the Board of Supervising Engineers more than a year ago regarding equipment requirements to take care of the increase in traffic in Chicago, the local transportation committee passed an order that a contract be made immediately for the purchase of 168 new cars. In addition it ordered that a contract be made so that fourteen additional new cars will be delivered each month until February, 1916, making a total of 336 cars to be purchased and delivered before that date. In connection with car purchases, a movement has been instigated by the labor unions to require the Chicago Surface Lines to purchase Chicago-built cars. A resolution was passed by the local transportation committee indorsing this policy, and by motion it was decided to hold a conference on this subject between the committee, the officials of the Chicago Surface Lines and the Board of Supervising Engineers to determine what could be done.

### CAR-FULL SIGNS IN BROOKLYN

T. S. Williams, president of the Brooklyn (N. Y.) Rapid Transit Company, notified the board of health that he would comply with orders issued prohibiting overcrowding on the Graham Avenue line. Colonel Williams in a letter declared the order to be illegal and unjust and has requested a hearing at which the company's side can be presented, but promised that the order would be complied with pending the action of the board of health on the hearing.

The company, under protest, put the recommendation into effect on March 8. Large placards were posted on the cars of the Graham Avenue line announcing that the board of health had forbidden the carrying of more than half as many standees as seated passengers, thus limiting the capacity of the cars to fifty-four. The conductors were furnished with metallic signs to be hung on the gates as soon as a car had fifty-four passengers. They read: "No more passengers on this car, by order of the board of health." The conductors were also instructed to close the gates as soon as the required number of passengers had boarded the car and to use every means except force to prevent that number from being exceeded. Policemen were stationed along the line to see that the public regarded the order. It was generally regarded that many of the patrons who ordinarily use the Graham Avenue line took to the cars of the Flushing and Flushing-Knickerbocker lines, which operate over the same route as the Graham Avenue cars between the Brooklyn Bridge and Broadway. Special precautions were taken by the police to preserve order at the loop at the Manhattan end of the Brooklyn Bridge at which the Graham Avenue and Flushing Avenue and Flushing-Knickerbocker Avenue cars are turned for the trip back to Brooklyn.



**Ordinance Against Smoking.**—The City Council of Butte, Mont., has passed an ordinance prohibiting smoking in closed street cars. The ordinance provides fines ranging from \$5 to \$25 for violations.

**Examination for Promotion.**—An examination of conductors and motormen of the San Francisco (Cal.) Municipal Railway system who are eligible for promotion to the position of inspectors will be held by the Civil Service Commission on March 20.

**Near-Side Cars in Buffalo.**—Cars of the P-A-Y-E near-side type are now being operated on all except three of the lines of the International Railway in Buffalo, and many similar cars are now in operation on the company's lines in Niagara Falls and Lockport.

**Methuen Service Finding.**—The Massachusetts Public Service Commission has ordered the Bay State Street Railway to install a double track in Methuen between the intersection of Hampshire and Lowell Streets and Railroad Square, to relieve rush-hour congestion.

**Fare Increase Proposal Lost.**—On March 5 the Board of Control of Toronto, Ont., refused to concur in the recommendation of Works Commissioner Harris for increasing the fares on the Toronto Civic Railway in order to place the municipal lines on a self-sustaining basis.

**Bundle Day in Louisville.**—The Louisville (Ky.) Railway on Feb. 25, which was "bundle day" in that city, supplied two cars which stopped before certain of the school houses of the city and gathered up the bundles which accumulated there, delivering them at certain depots on the company's lines where they were assembled for distribution among the poor.

**Air Tests in Cleveland.**—On the order of Health Officer Ford of Cleveland, Ohio, City Chemist White will investigate the ventilation of street cars and the possibility of their being distributors of pneumonia and grip germs. The records show that there was a very material increase in the number of cases of pneumonia in February over the same month last year.

**Reduction in Accidents in Lexington.**—According to a statement issued by F. W. Bacon, vice-president of the Kentucky Traction & Terminal Company, Lexington, Ky., there has been only one accident on the city lines of the company since the front-entrance-only system was put into effect last summer, while there were twenty-five rear step mishaps in 1912 and thirty-two in 1913.

**Contest of Service Order.**—Refusing to obey the orders of the Public Service Commission of the First District of New York directing the operation of additional trains on its road, the Long Island Railroad has served the commission with a writ of certiorari to certify to the Supreme Court the records in the orders for review by the court. The company claims that the orders were unwarranted, unreasonable and arbitrary.

**Parcel Checking.**—In the principal ticket offices of the Northern Ohio Traction & Light Company, Akron, Ohio, a uniform charge of 5 cents has been established for checking hand baggage or parcels left to be called for. In some instances, a charge of 10 cents was formerly made, and this is the rate prevailing in many places. The accommodation of interurban patrons is the object sought to be attained. The 5-cent charge is expected to do no more than cover the cost of the service.

**Adjustment Under Gentlemen's Agreement.**—As a result of the so-called "gentlemen's agreement" entered into between E. G. Connette, president of the International Railway, Buffalo, N. Y., and representatives of various business men's organizations, the company has placed additional cars in service during the rush hours in the morning and in the evening. At several points in the downtown section of the city extra cars are stationed so that, if they are needed, they can easily be switched onto the main line of traffic.

**Crusade Against Spitting.**—A crusade against spitters has been conducted quietly by the board of health of New York since Jan. 1, summons having been served on all found violating the law against this practice. According to the department 239 persons were summoned, and only fifteen

discharged in the first two months of the year, the majority being fined from \$1 to \$5, the total amount received being \$192. The detailed statement is as follows: Number of persons summoned to court, 239; fined, 159; sentence suspended, fifty-two; discharged, fifteen; cases pending on March 4, thirteen.

**Car Capacity Controversy.**—Mayor Church of Toronto, Ont., at the meeting of the Board of Control on March 3 submitted a motion regarding overcrowding on street cars on which the corporation counsel will be asked to report. It deals with three points: first, that the present city by-law allowing 50 per cent of standing room in excess of the seating capacity be repealed; second, that the city oppose the application of the Toronto Railway to the Ontario Railway & Municipal Board for an order confirming this by-law, and third, that the attorney-general be requested to proceed with the indictments against the Toronto Railway for alleged overcrowding.

**Rates Under Advisement.**—The Public Service Commission of the State of Washington has taken under advisement the suit of the city of Seattle against the Puget Sound Electric Railway, operating from Seattle to Tacoma, to require the company to carry passengers for a 5-cent fare within the limits of Seattle. The contention of the city is that the line should be considered a street railway inside the city limits. The company took the position that it is operating an interurban railroad between Seattle and Tacoma and that the State law does not apply to this case. At present passengers traveling to Georgetown, Davis and other stations on the Puget Sound Electric Railway within the limits of the city of Seattle pay 9, 12 and 14 cent fares based on distances.

**Creating Bus Sentiment.**—Magistrate Barlow, sitting in the West Side Court in New York, dismissed on March 4 two employees of the People's Five-Cent Bus Company, charged with operating vehicles bearing an advertisement asking for public support of a franchise, in violation of Section 41 of the corporation ordinances. The magistrate decided that the matter was one of civil, not of criminal, procedure. Along one side of the car is painted the following legend: "Why hang on a strap, when the People's Five-Cent Bus Company offers a seat to each passenger in its electric automobiles for a 5-cent fare? The Board of Estimate knows the answer, ask them." On the other side the legend reads: "You may ride in this bus for a 5-cent fare if the Board of Estimate will permit you to use your streets."

**Memphis Transfer Case.**—The Memphis (Tenn.) Street Railway transfer case has been argued before the Court of Appeals and submitted to that body for its decision. It involves the question whether the railway must issue transfers on street railway tickets sold at eleven for 50 cents. The hearing is on appeal from the lower courts which found for Thomas Dies, commissioner of public utilities, grounds and buildings, in his suit for mandamus. Charles M. Bryan, city attorney for Memphis, argued that under the franchise under which the railway is operating it can be compelled to issue transfers. Luke E. Wright, former secretary of war, for the company, contended that the refusal of the company did not mean violation of any law and that if the company were compelled to issue transfers on the lower rate it could not make expenses.

**Safety First League in Louisville.**—Organization of a safety first league to include all the employees of the public utility corporations of Louisville, Ky., is expected to result from a joint meeting held in the chapel of the Louisville Railway. There were 300 delegates present from the railway, the Louisville Gas & Electric Company, the Cumberland Telephone & Telegraph Company and the Home Telephone Company. Although definite steps looking toward the formation of the league were not taken, arrangements were made for other meetings. Moving pictures and stereopticon views were explained by A. W. Lee, chairman of the safety first committee of the employee's league of the Louisville Gas & Electric Company. Samuel Riddle, superintendent of transportation of the Louisville Railway, and Frank H. Miller, chief engineer of the company, were the principal speakers. Among the others who addressed the meeting was Donald McDonald, vice-president and general manager of the Louisville Gas & Electric Company.



## Personal Mention

Mr. Harro Harrsen, managing director of the Mexico City (Mexico) Tramways Company, spent a few days in New York last week on his way to London where he expects to meet Dr. F. S. Pearson, president of the tramways.

Mr. William Parker, heretofore inspector of the Hamilton (Ont.) Street Railway, has been appointed superintendent to succeed Mr. J. Pearson, who resumes his former position of chief inspector and will, in addition, act as assistant superintendent.

Mr. W. H. Taaffe has been appointed chief of the division of capitalization of the Public Service Commission for the Second District of New York to succeed Mr. H. C. Hopson, who has established himself with offices in New York as a public utility and railway expert.

Lieut.-Col. E. W. Rathbun, president of the Oshawa (Ont.) Railway, was given a farewell by the citizens of Deseronto, Ont., on Feb. 13. He has been appointed to the command of the Sixth Artillery Brigade, and will sail with the second contingent for service in Europe.

Mr. W. R. Hall, manager of the Anniston Electric & Gas Company, Anniston, Ala., has been appointed manager of the North Alabama Traction Company, New Decatur, Ala. Several years ago Mr. Hall was the general manager of the company at New Decatur. He then became general manager of the Sheffield (Ala.) Company. Subsequently he became connected with the Anniston Electric & Gas Company as general manager.

Mr. H. C. Prather has been appointed assistant general manager of the Empire United Railways, with offices in the Electric Railway Terminal Building, Syracuse, N. Y. Mr. Prather heretofore has been local manager of the Rochester Division. Under the new arrangement Mr. Prather's jurisdiction includes the Oswego Division of the Empire United Railways. Prior to becoming connected with the Empire United Railways Mr. Prather was general manager of the Buffalo, Lockport, & Rochester Railway.

Mr. Samuel Gausmann, roadmaster of surface lines of the Brooklyn (N. Y.) Rapid Transit System, has resigned to enter business for himself in Brooklyn as a street railway track and paving expert. He will specialize in preparing estimates, arranging contracts and supervising work in this field. Mr. Gausmann began his railway career with the Middletown & Goshen Traction Company some twenty years ago. He resigned as superintendent of that road in 1901 to go to the Brooklyn Rapid Transit System as foreman in the way and structure department. In 1911 Mr. Gausmann was appointed roadmaster of surface lines.

Mr. E. L. Mathews, hitherto assistant engineer of the way and structure department of the Brooklyn (N. Y.) Rapid Transit System, has been appointed engineer of surface lines. This position is a new office embracing in its scope the duties of roadmaster of surface lines. The latter position was abolished with the resignation of Mr. Samuel Gausmann, as noted elsewhere in this column. Mr. Mathews was formerly engineer of way and structure of the Coney Island & Brooklyn Railroad, to which position he was appointed in 1908. He joined the Brooklyn Rapid Transit System when the company absorbed the Coney Island & Brooklyn Railroad in 1914. Previous to coming to Brooklyn Mr. Mathews was with Newhall & Company, railway contractors, Baltimore, Md., his native State. While with that firm, Mr. Mathews had charge of general construction work in different sections of the country.

Mr. W. O. Woodward, who has been traffic manager of the Chicago, Lake Shore & South Bend Railway, Michigan City, Ind., for the last five years, has resigned. Mr. Woodward began his railway career with the Pennsylvania Railroad in 1901, and later became connected with the Lake Erie & Western Railroad, where he served until 1905 in various capacities in the freight department. In November, 1905, he accepted a position in the accounting department of the Terre Haute, Indianapolis & Eastern Traction Company, Indianapolis, Ind., and subsequently served in the passenger and freight departments of the company. For a short time Mr. Woodward acted as division freight and passenger agent of the Ohio Electric Railway, at Dayton, Ohio,

but returned to the Terre Haute, Indianapolis & Eastern Traction Company. In March, 1909, he was appointed traffic manager of the Indianapolis, Crawfordsville & Western Traction Company, with which he remained until 1910.

Mr. William Clapper, whose appointment as traffic manager of the Inturban Railway, Des Moines, Ia., to succeed Mr. C. T. Chapman was announced in the *ELECTRIC RAILWAY JOURNAL* of Feb. 27, is a native of Des Moines and a traffic man with wide experience in the steam railroad field. He began railroad service in June, 1899, as clerk to the commercial agent of the Minneapolis & St. Louis Railroad at Minneapolis, Minn. Mr. Clapper remained in that position until January, 1900, at which time he returned to Des Moines to become chief clerk to the commercial agent of the Wabash Railroad. In 1904 he was made contracting freight agent of that company with headquarters at Des Moines, and in October, 1907, upon the resignation of the division freight and passenger agent, he succeeded to that position, in which he served until March 1, 1915. In the latter position Mr. Clapper had charge of both freight and passenger traffic in Iowa.

Mr. W. P. Strandborg of the staff of the *Evening Telegram* of Portland, Ore., has been appointed to direct the work of the publicity department of the Portland Railway, Light & Power Company, Portland, Ore., which has been re-established. Mr. Strandborg has for fifteen years been in continuous service in the newspaper field in the East and on the Pacific Coast. He has been a member of the editorial staff of the *Evening Telegram* for the last nine years. Among the organizations of Portland of which he is a member are the Portland Ad Club, Portland Press Club, Portland Automobile Club, Progressive Business Men's Club, Portland Transportation Club, the Portland Social Turn Verein and the Elks. He was the founder and is the head of the Ancient Order of Muts. President F. T. Griffiths, of the company, in announcing the appointment of Mr. Strandborg, said that the policy of the company would be to conduct a permanent information service, an important phase of which would be to keep the public advised of the part the company is playing in the study of permanent development of the city and adjoining territory served by the corporation.

Mr. O. A. Honnold has resigned as electrical engineer of the Utah Light & Traction Company, Salt Lake City, Utah, until recently the Utah Light & Railway Company. Mr. Honnold was graduated from Purdue University. After two years in power-house construction and operation with the Citizen's Street Railway, Detroit, Mich., Mr. Honnold in 1896 took charge of miscellaneous engineering and operating work and helped to carry out the consolidation of several power companies and street railways in Salt Lake, Ogden and vicinity. After the late Edward H. Harriman bought out the light, power and street railway interests in 1906, Mr. Honnold did the electrical engineering work and had charge of all electrical construction and reconstruction in connection with rebuilding the old properties. He also had charge of all of the stations and transmission lines and distribution operating departments. In resigning from the Utah Light & Traction Company Mr. Honnold concludes nineteen years of work at Salt Lake, with the exception of two years, from 1900 to 1902, when he was with the Lachine Rapids Hydraulic & Land Company, at Montreal, Can. Between \$7,000,000 and \$8,000,000 was spent in improvements made on the property under Mr. Honnold's supervision at Salt Lake from 1907 up to 1914. Mr. Honnold expects to spend several months in taking a vacation and will then look after his own interests in the West.

Mr. Charles C. Elwell has been named a member of the Public Utilities Commission of Connecticut to succeed Mr. Theodore B. Ford, Bridgeport. Mr. Elwell at present is engineer of the commission. Mr. Elwell was born in 1855, at Belfast, Me. He was educated in the public schools and at Patten academy was prepared for college. He entered the University of Maine, from which he was graduated in 1878, with the degree of civil engineer. Subsequently he was with the United States lighthouse engineering department for three years, in South Carolina, Georgia and Florida. He began railroading in 1882, with the old New York & New England railroad, now a part of the New York, New Haven & Hartford Railroad in the engineering



## Construction News

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

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

### RECENT INCORPORATIONS

\*Alamance, Durham & Orange Railway & Electric Company, Burlington, N. C.—Application for a charter has been made by this company to build a 49-mile electric railway from Ossipee to Durham, via Ossipee, Altamaha, Glencoe, Carolina, Hopedale, Burlington, Graham, Haw River, Swepsonville, Saxapahaw, River Falls and Chapel Hill. Incorporators: Junius Harden, John M. Cook, C. Brown Cox and D. M. Teague. Headquarters: Burlington.

Radford-Willis Southern Railway, Radford, Va.—Application for a charter has been made by this company in Virginia to build a 25-mile interurban railway from Radford to Willis. John L. Vaughan, Shawsville, president; E. F. Strong, Willis, vice-president; W. L. Castle, Willis, secretary, and A. L. McClung, Radford, treasurer. Headquarters: Radford. [E. R. J., Feb. 6, '15.]

### FRANCHISES

San Jose, Cal.—The San Jose Railroad has asked the Council for a franchise on Alum Rock Road in San Jose. Sealed bids will be received by the Board of Supervisors until April 5 for said franchise.

Bristol, Conn.—The Bristol & Plainville Tramway Company has asked the Council for a franchise along the center of Park Street in Bristol.

Hartford, Conn.—The New Britain Street Railway has asked the Council for a franchise in Hartford. This is part of a plan to build an electric line between Hartford, New Britain, Plainville and Bristol. [E. R. J., Feb. 27, '15.]

New Britain, Conn.—The Connecticut Company has asked the Council for a franchise on Farmington Avenue, also through Stanley Quarter to Hartford, and through Os-good Avenue and North Burritt Street to Plainville.

St. Augustine, Fla.—The Jacksonville & St. Augustine Public Service Corporation has asked the Council for a franchise for an extension of time of one year on its franchise in St. Augustine. About 7 miles of grade has been completed south from South Jacksonville. [E. R. J., June 20, '14.]

Belleville, Ill.—The East St. Louis & Suburban Railway has received a franchise from the Council for a line on Rock Road, from the old city limits of Belleville to Edgemont.

Lancaster, N. Y.—The Buffalo & Depew Railway has asked the Council for a franchise to extend its lines from its present terminus, through Ellicott Road and Central Avenue to the New York Central Railroad tracks in Lancaster. The petition also asks for the right-of-way north on the Transit Road to extend a line north to Bowmansville.

Brantford, Ont.—The Brantford City Council has asked the Ontario Legislature to confirm a number of by-laws, among them being one for borrowing upon debentures \$270,000 for the purchase, improvement and equipment of the Grand Valley Railway.

Brantford, Ont.—The Brantford & Hamilton Electric Railway has asked the Council for an extension of time on its franchise in which to build the branch from Langford to Galt, Ont.

Cornwall, Ont.—The Cornwall Street Railway, Light & Power Company has asked the Ontario Legislature for a twenty-year extension of time on its franchise in Cornwall.

Hamilton, Ont.—The Hamilton Mountain Electric Railway has applied to the Ontario Legislature for an extension of time to build the projected electric line from the Hamilton Mountain Road, Ancaster Township, at the crossing of the Brantford & Hamilton Electric Railway, to Mount Albion, Barton Township, and from the northerly boundary of Hamilton and Caledonia Road to Ryckman's Corners, 3 miles. T. H. Crerar, L. R. E. Awrey, S. B. Thompson, G. E. Armstrong and T. H. Stinson, Hamilton, Ont., are the provisional directors.

Richmond, Va.—The Virginia Railway & Power Com-

partment. He was also in the employ of the Philadelphia & Reading Railroad for a short time previous to 1891, when he entered the employ of the Baltimore & Ohio Railroad. From 1891 to 1893 Mr. Elwell was engineer of maintenance of way for the latter road, and was stationed at Philadelphia and at Pittsburgh. In 1893 he entered the employ of the New York, New Haven & Hartford Railroad, and served three years as roadmaster, in charge of the New York division, constructing the "four tracks" between New York and New Haven. He was promoted to be superintendent of the Norwich & Worcester, the Air Line, Northampton and Shore Line divisions, in 1895, and he served the road in this capacity until 1908. At this time he was transferred to the electric lines as engineer of the Connecticut Company, and continued in that capacity until September, 1911, when the Public Utilities Commission was formed. The new commission chose Mr. Elwell as its chief engineer and inspector. His appointment as a commissioner has been confirmed.

Mr. H. L. Beach, whose appointment as manager of the Utah Light & Traction Company, Salt Lake City, Utah, was announced in the ELECTRIC RAILWAY JOURNAL of Feb. 29, has had a well-rounded experience in railway operation. Mr. Beach is forty-five years of age. He entered electric railway work sixteen years ago as publicity manager of the Chicago (Ill.) Union Traction Company. Subsequently he was appointed assistant general superintendent of the north and west side lines and later was advanced to the position of general superintendent of the northern division of what is now known as the Chicago Railways. He resigned in 1912 and he became associated with Mr. Bion J. Arnold in connection with the appraisals of the electric railway properties in Toronto, Can., and Kansas City, Mo. Recently Mr. Beach served as traction expert with the Board of Supervising Engineers, Chicago Traction, which position he held until shortly before he was appointed manager of the Salt Lake City property.



H. L. BEACH

Mr. G. Tracy Rogers, who has retired as president of the Binghamton (N. Y.) Railway, embarked with some associates in the street railway business in Binghamton in 1889 and later bought the eight or nine other companies in Binghamton, built up the properties and organized the Binghamton Railway. He was instrumental in building the electric railway through Elmira to Corning and Painted Post, and that road with the Corning & Painted Post Railroad is now known as the Elmira, Corning & Waverly Railroad, with Mr. Rogers as president. Mr. Rogers also bought the property of the Waverly, Sayre & Athens Traction Company. He was one of the original directors and incorporators of the Hudson & Manhattan Railroad and consolidated some of the roads outside of Buffalo into the Buffalo Southern Railway and was connected with the syndicate which bought and owned the Port Jervis & Monticello Railroad. About 1905 Mr. Rogers and Mr. Leo H. Wise bought the property of the Rutland Street Railroad, the Peoples Gas Company and the Chittenden Power Company, Rutland, Vt., and consolidated the companies as the Rutland Railway, Light & Power Company. Later they purchased the Rutland Electric Light Company. Subsequently Mr. Rogers bought the property of the Fair Haven Electric Company and the Carvers Falls Power Company, and after operating the companies independently for a time he consolidated them with the Western Vermont Power Company, which, together with the Rutland Railway, Light & Power Company, was sold to the General Gas & Electric Company. Mr. Rogers was president of the Street Railway Association of New York State for nine years. The Binghamton Chamber of Commerce has adopted a resolution congratulating Mr. Rogers upon his accomplishments and expressing the desire that he continue his residence and activities in that city.



pany will ask the Council for a franchise for an extension of its line from its terminus at Oakwood Cemetery to Evergreen Cemetery in Richmond.

#### TRACK AND ROADWAY

**Lacombe & Blindman Valley Electric Railway, Lacombe, Alta.**—Grading is reported completed on this railway from Lacombe to Rimbey, 37 miles. Nothing has been decided as to when the track will be laid. J. C. Gibson, 56 King Street, West, Toronto, president. [E. R. J., Dec. 12, '14.]

**Salt River Valley Electric Railway, Phoenix, Ariz.**—Surveys have been completed by this company between Phoenix and Mesa, 18 miles, and between Scottsdale and Phoenix, 12 miles. The company's franchise for the line expired Dec. 21, 1914, and the project has been abandoned on account of financial conditions. C. C. Lewis, Phoenix, president. [E. R. J., Sept. 26, '14.]

**Monterey & Pacific Grove Railway, Monterey, Cal.**—An extension from Monterey to Fresno is being contemplated by this company.

**Redwood City, Cal.**—Plans are being contemplated to build an electric railway in Redwood City from the harbor site to the foothills via Redwood, Highlands and Wellesley Park. E. F. Fitzpatrick, Redwood City, is said to be interested. [E. R. J., May 16, '14.]

**Connecticut Company, New Britain, Conn.**—Arrangements are being made by this company to begin work as soon as the weather permits double-tracking its line on Chestnut Street, Stanley Street and Dwight Street in New Britain. Plans are also being made to lay new track and ties on its lines in Norwalk and vicinity in the spring.

**Shore Line Electric Railway, Saybrooke, Conn.**—An extension to Attawaugan and vicinity is being contemplated by this company.

**Stafford & Monson Street Railway, Stafford Springs, Conn.**—As soon as financial arrangements can be made this company will begin work on its 10-mile line between Stafford Springs and Monson. Robert H. Fisk, Stafford Springs, is interested. [E. R. J., Dec. 21, '13.]

**Union Railway & Power Company, Chicago, Ill.**—Preliminary arrangements are being made and most of the right-of-way has been secured by this company on the line to connect South Chicago and Harvey, Ill., and Hammond and Gary, Ind. Capital stock, authorized, \$10,000. Capital stock, issued, \$10,000. J. W. Paul, 161 Quincy Street, Chicago, general manager. [E. R. J., May 9, '14.]

**Pekin & Petersburg Interurban Railway, Pekin, Ill.**—Plans are being made to begin work at once on the reconstruction and extension of this company's lines in Pekin.

**Chicago, Peoria & Quincy Traction Company, Peoria, Ill.**—This company advises that it is ready to construct the first division of its line from Peoria to Canton, a distance of 25 miles, and it is now in the market for ties, rails and equipment and would like to figure with grading outfits on the grading. Woolf Tritel, National Bank Building, Peoria, general manager. [E. R. J., Feb. 27, '15.]

**Illinois Traction System, Peoria, Ill.**—This company is building a spur track at Danville, extending from the main track through Ellsworth Park to the west end of the Mill Street bridge. The new spur will be used for transporting material to the proposed new bridge.

**Peoria & Chillicothe Electric Railway, Peoria, Ill.**—Surveys are being made by the Allen Engineering Company on this 20-mile line to connect Peoria, Chillicothe, Mossville and Rome. Henry T. Mallen, Peoria, is among those interested. [E. R. J., Feb. 27, '15.]

**Evansville, Chrisney & Eastern Railway, Evansville, Ind.**—Construction of the proposed electric railway lines to connect Boonville and Chrisney and from Boonville to Lynnville is to begin inside of two months, according to an announcement made at the annual meeting of this company held in Evansville recently. Directors were elected as follows: J. P. Chrisney, Chrisney; T. P. Tillman and James A. Hemenway, Boonville, and J. E. Coe and G. Mulhausen, Evansville. Subsidies for the lines have already been voted. [E. R. J., Sept. 26, '14.]

**Charles City (Ia.) Western Railroad.**—Active work has been begun on the electrification of this railway. Orders have been placed for 26 miles of copper wire, 1200 poles and

22,000 ties. The extension of the railway, to be carried on at the same time, will be from Charles City in a northeast direction to the edge of the county in Niles Township, a distance of 8½ miles. This is the first step in its extension to Cresco. Bids have been sent to several contracting firms for grading, bridge and culvert work. E. R. Ernberger, Charles City, general manager.

**Worcester (Mass.) Consolidated Street Railway.**—An expenditure of \$75,000 is to be made in the spring by this company in relaying its tracks and placing the feed wires underground on Main Street in Worcester.

**Libby (Mont.) Western Railway.**—Preliminary arrangements are being made and it is expected that work will be begun about Aug. 1 on the construction of this proposed 398-mile electric railway to connect Missoula, Kalispell, Libby and Troy, Mont., and Bonners Ferry, Idaho, and Spokane, Wash. The power house will be at Kootenai Falls, Mont., and the repair shops will be located at Libby. Capital stock, authorized, \$2,500,000. Capital stock, issued, \$1,000,000. Bonds, authorized, \$5,000,000. Bonds, issued, \$1,000,000. It is planned to purchase power from the Kootenai Falls Electric & Power Company. Officers: Thomas A. McCanis, Libby, president; Amos L. Thompson, vice-president; P. M. Benard, Kalispell, secretary; Chester A. Adams, Libby, secretary; and Paul D. Pratt, Libby, Mont., treasurer. [E. R. J., March 6, '15.]

**Buffalo & Depew Railway, Buffalo, N. Y.**—This company has presented a petition to the Town Board of Lancaster asking permission to extend its lines through an additional street in Buffalo and has also asked for right-of-way to extend its line from Lancaster to Bowmansville. A public hearing will be held on March 22.

**Brooklyn (N. Y.) Rapid Transit Company.**—Pursuant to the direction of the Public Service Commission, First District, this company has obtained bids for supplying the steel for Section No. 2 of the third-tracking of the Broadway elevated railroad in Brooklyn, namely, from Myrtle Avenue to Aberdeen Street. These bids were submitted to the commission by the company, with the recommendation that the contract be awarded to Lewis F. Shoemaker & Company, the lowest bidders, whose price is \$37.20 per ton. The total amount of the contract will be approximately \$279,000. The commission, upon the advice of its chief engineer, has approved the award of the contract to Shoemaker & Company. The Public Service Commission for the First District has approved the award of the contract for the construction of the first section of the company's elevated extension on Jamaica Avenue from Crescent Street to Myrtle Avenue, to Post & McCord, who will complete the work in one year.

**\*Gowanda, N. Y.**—Interest in the proposed electric line from Jamestown to Buffalo is revived. Some time ago the rights-of-way from Falconer to Gowanda were mostly secured. Petitions for franchises for the towns of Poland, Ellington, Conewango, Leon, Dayton and Persia are now being prepared. The rights-of-way from Gowanda to Hamburg will be taken up as soon as the weather permits. It is the intention of those who have the matter in charge to hold meetings in the several towns from Gowanda to Buffalo as early as possible. The officers of the organization are J. B. Anderson, Ellington; R. G. Crandall, Kennedy; Franklin E. Bard, Gowanda; Frank N. Rowe, South Dayton; Clarence G. Mead.

**Interborough Rapid Transit Company, New York, N. Y.**—Installation of equipment for the operation of trains has been begun in the Steinway tunnel. From the Long Island City end high power cables were carried into the tube, and electricians are now at work putting them in place. These cables will carry the wires for lighting as well as for the operation of trains. The contractors are installing it at this time so as to get power for light to complete the laying of the tracks and the installation of the third-rail. The contractors said that the tunnel will be completed very near to contract time, which is about the middle of April, if nothing unforeseen occurs.

**North Tonawanda, N. Y.**—In accepting the franchise granted by North Tonawanda recently to the International Railway and the Frontier Electric Railway to build a fast service passenger line and fast service freight line, respectively, over the Buffalo, Thousand Islands & Portland right-of-way, from Niagara Falls to Buffalo, which those electric



railway companies are to share, announcement was made recently that work on both lines is to begin the coming spring. The officials stated that they hope to have the new roads in operation early next year. Under the terms of the North Tonawanda franchise both companies must have their lines completed and in operation by Dec. 31, 1916.

**Cleveland, Alliance & Mahoning Valley Railway, Cleveland, Ohio.**—The branch line between Warren and Newton Falls is nearly completed and plans are being made to place it in operation by April 1.

**Cleveland (Ohio) Railway.**—Plans are being made to extend the East Seventy-ninth Street line from Kinsman Road to the Pennsylvania Railroad tracks in Cleveland. Every mile of track which this company wants to relay this year in Cleveland will be inspected by the Street Railway Committee of the City Council. The company has asked for authority to relay 35,551 ft. of single track at a cost of \$262,476 and to resurface 11,871 ft. of roadway at a cost of \$38,019.

**Hamilton (Ont.) Street Railway.**—Plans are being made by this company to begin work early in the spring on the extension on Birch Avenue across Coal Oil Inlet in Hamilton; 10-ft. ties will be used.

**London (Ont.) Street Railway.**—During the year this company plans to build the following extensions in London: Hamilton Road—double tracking between Horton Street and Mamelon Street; double tracking between Rectory Street and Egerton Street; track extension from the present terminus at Egerton Street to East Street. High Street, South London—Track extension from present terminus at McClary Avenue to Emery Street. Quebec Street—Dundas Street to Canadian Pacific Railway, new single-track line. Mount Pleasant Avenue, West London—New single-track line from Wharncliffe Road to Francis Street. Dundas Street—Double tracking from fair grounds to Ashland Avenue. H. A. Brazier, city engineer.

**Ottawa (Ont.) Electric Railway.**—An extension along Bronson Street in Ottawa is being contemplated by this company.

**Toronto, Ont.**—According to a statement made by Sir Adam Beck, work will be begun soon laying 98 miles of railway northeast of Toronto by the Hydro Electric Power Commission.

**Toronto, Ont.**—Bids will be received until March 16 for the supply of track material, overhead line material and oak ties required for the construction of the Lansdowne Avenue line in Toronto. Specifications may be obtained upon application at Room 12, purchasing and accounting section, of the Department of Work, City Hall, Toronto.

**Westside Electric Street Railway, Charleroi, Pa.**—The Mercantile Bridge Company over which this railway company operates, expects to install a wood block floor on its bridge located at West Monessen, Pa. This work will require approximately 5000 sq. yd. of creosoted wood blocks and 200,000 ft. creosoted lumber.

**Wilkes-Barre & Hazleton Railway, Hazleton, Pa.**—Plans are being contemplated by this company for an expenditure of about \$600,000 for double-tracking its system.

**McConnellsburg & Fort London Railway, McConnellsburg, Pa.**—Preliminary arrangements are being made by this company to build its 10-mile line between McConnellsburg and Fort London. E. J. Post, McConnellsburg, president. [E. R. J., March 6, '15.]

**Phoenixville, Valley Forge & Stafford Electric Railway, Phoenixville, Pa.**—Steps are being taken by this company towards the completion of the railway to Stafford and also from Valley Forge to Bridgeport, while the line through Phoenixville will be continued to the Philadelphia and Reading stations.

**Scranton & Binghamton Railroad, Scranton, Pa.**—During the next four weeks this company expects to award contracts for new rails for 20 miles of new track between Nicholson and Montrose, Pa. Work has been completed by this company from Nicholson to within about 2 miles of Brooklyn, and it is planned to have this line completed to Montrose by the fall. This is part of the plan to build an electric line between Scranton and Binghamton.

**Hull (Que.) Electric Company.**—Citizens of Gatineau Point and of Hull are negotiating with this company to secure an extension of the company's line to Gatineau Point.

**Charleston-Isle of Palms Railway, Charleston, S. C.**—This company has been authorized to build an extension across the government reservation on Sullivan Island.

**Johnson City, Tenn.**—Representatives of this city and Jonesboro, which would be connected by a projected electric railway to be constructed at a cost of \$80,000 between the two cities, met recently in the interests of the project. Mayor S. E. Miller, Johnson City, presided, and among those who attended were Mayor A. S. Murray, Jonesboro; R. M. May, J. H. Anderson, A. L. Shipley and J. S. Pritchett, all of Jonesboro. [E. R. J., Feb. 13, '15.]

**Galveston (Tex.) Electric Company.**—Improvements are soon to be made by this company on its Twenty-seventh Street and Thirty-seventh Street lines to the new baseball park in Galveston.

**Virginia Railway & Power Company, Richmond, Va.**—An extension to connect Petersburg and City Point is being considered.

**Charleston (W. Va.) Interurban Railway.**—This company expects to extend the Kanawha Valley Traction line as rapidly as possible to Montgomery, W. Va., 25 miles east of Charleston. This line is leased by the Charleston Interurban, which operates it. The line from South Charleston to St. Albans was built by the Charleston Traction Company, but was recently transferred to the Kanawha Valley Traction Company, William E. Chilton, president.

**Milwaukee Electric Railway & Light Company, Milwaukee, Wis.**—Plans are being considered by this company to extend its line from Elkhorn to Delavan.

#### SHOPS AND BUILDINGS

**Des Moines (Ia.) Street Railway.**—This company has opened a new office in the Flynn Building in Des Moines.

**Ohio Electric Railway, Cincinnati, Ohio.**—This company has opened its new passenger station at Fort McKinley.

**Ohio Valley Traction Company, Portsmouth, Ohio.**—Plans are being contemplated by this company to build a new pressed brick passenger station at the corner of Waller and Ninth Streets in Portsmouth.

**Brantford (Ont.) Municipal Railway.**—On Feb. 13 this company received the approval of the commissioners in Brantford of plans for a new passenger station to be built on the site of the old power house on Colborne Street opposite Clarence Street, Brantford. Work is to be begun at once.

**West Penn Traction Company, Pittsburgh, Pa.**—This company has leased the fourth, fifth, sixth and part of the seventh floors of the Benedum-Trees Building in Fourth Avenue in Pittsburgh. This space will be used for offices, the company having decided to establish permanent headquarters for many departments in Pittsburgh.

**Wellsburg, Bethany & Washington Street Railway, Bethany, W. Va.**—This company has just completed its new car-house and repair shop at Bethany.

#### POWER HOUSES AND SUBSTATIONS

**San Joaquin Light & Power Company, San Joaquin, Cal.**—It is reported that this company, which recently completed an electric power generating plant at The Forks above Springville, will soon begin to build a canal from a point on the Camp Nelson branch of the Tule River 9 miles above the power house, the purpose of the second canal being to furnish more water for the power house. It is said that the present waterfall at the power house creates 3000 hp, whereas the equipment there is capable of generating much more. The canal, if it is built, will necessitate 2 miles of tunneling, the longest tunnel to be 900 ft.

**Northern Pacific Railway, St. Paul, Minn.**—This company has purchased four 25-kw, 3500 r.p.m., 125-volt Curtis turbo-generator sets with switchboard and accessories from the General Electric Company.

**United Traction Company, Albany, N. Y.**—This company will add to its substation equipment a 1200-kw synchronous converter and three 440-kv-a. transformers which have been ordered from the General Electric Company.

**Mahoning & Shenango Railway & Light Company, Youngstown, Ohio.**—This company will install a 500-kw synchronous converter with 550-kv-a. transformer and switchboard which will be furnished by the General Electric Company.



# Manufactures and Supplies

## ROLLING STOCK

Cleveland (Ohio) Railway has ordered fifty front-entrance, center-exit, semi-steel cars from the G. C. Kuhlman Car Company.

Lehigh Traction Company, Hazleton, Pa., has sent out specifications, through L. B. Stillwell, for ten all-steel center-entrance city cars.

Third Avenue Railway, New York, N. Y., advises that it is not expecting to purchase new cars for its subsidiary, the Yonkers Railroad, as previously reported.

New York State Railways, Rochester, N. Y., noted in the ELECTRIC RAILWAY JOURNAL of March 6 as having issued specifications for forty prepayment, center-entrance cars, has withdrawn its request for bids on these cars and is now asking for bids on one sample car.

Binghamton (N. Y.) Railway has ordered fifty city cars from the Cincinnati Car Company through W. R. Kerschner, its eastern agent. Twenty of these cars, the order for which was reported in the ELECTRIC RAILWAY JOURNAL of March 6, are to be delivered at an early date, fifteen cars about the beginning of next year and the remaining fifteen at a still later date.

Chicago (Ill.) Surface Lines have been ordered by the Chicago City Council to purchase 336 cars in accordance with the terms of their contract with the city, before February, 1916. This order requires an immediate contract for the delivery of 168 cars with an additional contract for fourteen cars each month until the close of the fiscal year, February, 1916.

## TRADE NOTES

Esterline Company, Indianapolis, Ind., has received an order from the United Railways of St. Louis for 100 SM-95 "Golden Glow" headlights. This order was secured by F. O. Grayson, of the Grayson Railway Supply Company, St. Louis, Mo., agent.

Hess-Bright Manufacturing Company, Philadelphia, Pa., advises that notwithstanding the reported obstacles to the importation of its ball bearings, it continues to receive great quantities from its Berlin works, the total since Sept. 15, 1914, being 375,000 bearings of assorted sizes.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has received an order for electrical equipment for the cars recently ordered by the Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo., from the Cincinnati Car Company. The equipment includes four complete, four-motor equipments, with HL control. At the same time a contract was let for four HL control equipments to replace the automatic control on four cars. When the new equipment is installed the company will then have eight cars with HL control and twelve with automatic equipment.

Railway Improvement Company, New York, N. Y., held its annual meeting on March 1, and a number of changes were made in its organization. United States Congressman George W. Fairchild, of Oneonta, N. Y., was elected president to succeed Frank Hedley. John Starets was elected treasurer to succeed J. S. Doyle. T. Channing Moore, New York manager of the International Time Recording Company, was elected director in place of Mr. Hedley, and John Starets was elected director in place of Mr. Doyle. Congressman Fairchild is president of the International Time Recording Company and chairman of the board of directors of the Computing-Tabulating-Recording Company. The changes mentioned are due to the fact that the stock holdings of Messrs. Hedley and Doyle have been purchased by Messrs. Fairchild, Pizzini and Moore. This change makes the Railway Improvement Company more closely affiliated with the Computing-Tabulating-Recording Company and the International Time Recording Company, Endicott, N. Y. The latter company has always built the recorders of the Railway Improvement Company.

## ADVERTISING LITERATURE

Bridgeport Brass Company, Bridgeport, Conn., has issued a folder on its "phono-electric" trolley wire.

A. O. Schoonmaker Company, New York, N. Y., has issued

a price catalog of its India and amber stamped solid sheet mica segments and mica rings for railway motors.

Blaisdell Machinery Company, Bradford, Pa., has issued an unusually comprehensive catalog describing and containing data on its compressed-air machinery which is especially applicable to the operation of pneumatic tools and drills as used in machine shops.

Gas-Electric Motor Bus Corporation, New York, N. Y., has issued a catalog describing and illustrating its gas-electric stepless motor buses. As shown in the catalog, these buses are made both double deck with two-man operation and single deck, with one-man operation.

Nelsonville Brick Company, Nelsonville, Ohio, has issued a catalog describing its filler stretcher brick for use in paving next to car track rails. The catalog states that this company has shipped 639 miles of this brick for this use, and that in the last five years they have been used in eighty-nine cities, eleven states and in Canada. The catalog contains testimonial letters from the Cincinnati Traction Company, Pennsylvania & Ohio Railway and City Railway, Dayton, Ohio.

Walpole Tire & Rubber Company, Walpole, Mass., has issued a catalog describing its friction tape, insulating compounds, and molded rubber goods of every description. This company recommends its Armalac compound especially for the use of street railway armatures. This material is a neutral permanently plastic insulating compound for reinforcing the insulation for cotton covering of electrical conductors. Its constituents are paraffin wax, the melting point of which is raised permanently by a certain process, and petroleum naphtha. The paraffin base is said to insure permanency of insulation and resistance to moisture under the repeated heating and cooling of the windings in service. Armalac is made especially for street railway use for d.c. equipment, also for a.c. equipment where the pressure is 550 volts or under. It is neither alkaline nor acidulous, and therefore cannot attack copper wire.

Combustion Engineering Corporation, New York, N. Y., has issued a catalog describing and illustrating its Type E stoker. This stoker is of the underfeed type, the coal being fed into the furnace from beneath the fire in such a manner as to effect the distillation of the volatile matter from the coal and insure the complete combustion of the gases which are driven off. The coal is fed by hand labor or coal-conveying machinery into a large hopper and conveyed under the fire by means of the reciprocating sliding bottom of the feed trough which runs the full length of the stoker. The coal is delivered uniformly from truck to rear by the auxiliary pushers, and as it rises in the trough is distributed to the sides of the furnace by means of the moving bars. The burning fuel is constantly carried by the action of these bars to dumping trays along each sidewalk where the resulting ash or clinker is deposited. These trays are dumped by a single motion of the dump lever on the outside of the furnace. As stated in the catalog, these stokers are in use throughout Europe, South America and the United States, burning coking or non-coking coal ranging from 10 per cent to 40 per cent volatile matter and 5 per cent to 30 per cent ash. The catalog contains several illustrations of installations of this stoker under various types of boilers.

## NEW PUBLICATION

Central Electric Railway Accountants' Association Pamphlet. 1915. Sixty-six pages. Paper-bound.

This pamphlet of the Central Electric Railway Accountants' Association, issued under date of January, 1915, contains a list of present and past officers, the names of the members of the association, its constitution and by-laws and an index to papers and committee reports published in pamphlets previously issued. A synopsis is presented of the decisions and recommendations of the association in regard to handling interline accounts for both freight and passenger traffic, and reproductions of the standard forms to be used are included. The pamphlet also contains the following papers: "Compiling Operating Expenses," by E. L. Kasemeier; "Some Accounting Problems Not Electric," by W. B. Wright; the presidential address of L. T. Hixson at Dayton, 1914; "Cost Accounting in a Manufacturing Plant," by G. D. Piper, and several citations used by W. H. Forse, Jr., on the subject of depreciation at the Dayton meeting.