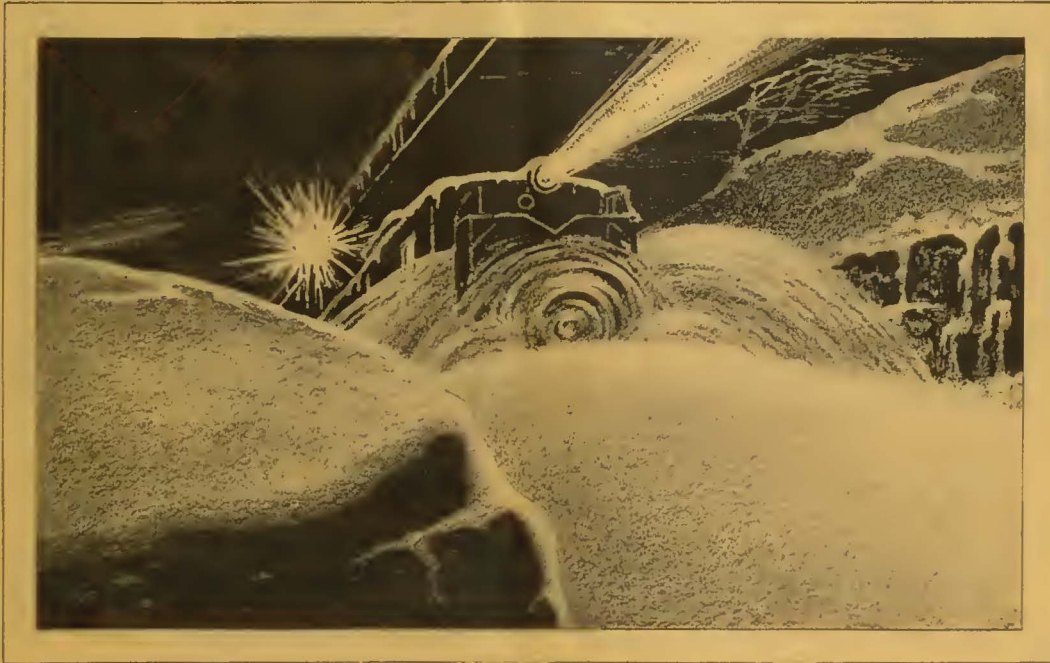


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Published weekly. Entered as second-class matter, June 23, 1908, at the Post Office, at New York, under the Act of March 3, 1879. Printed in U.S.A.

Cable Address: "Machinist, N. Y."

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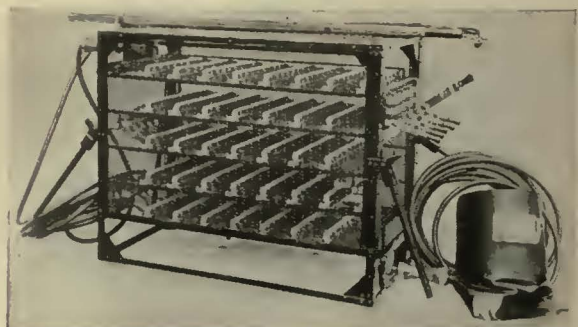
"Universal" Rotary Track Grinder



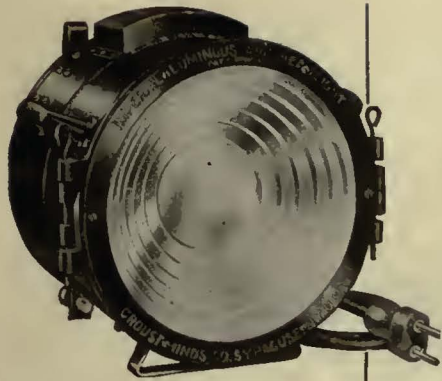
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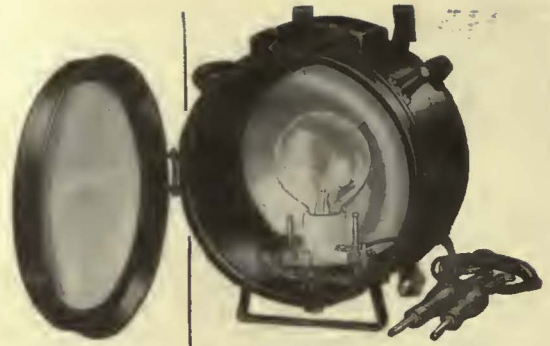
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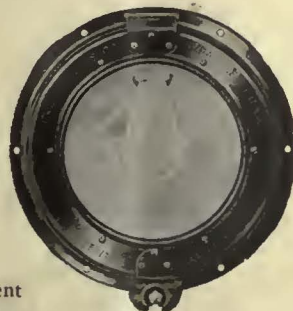
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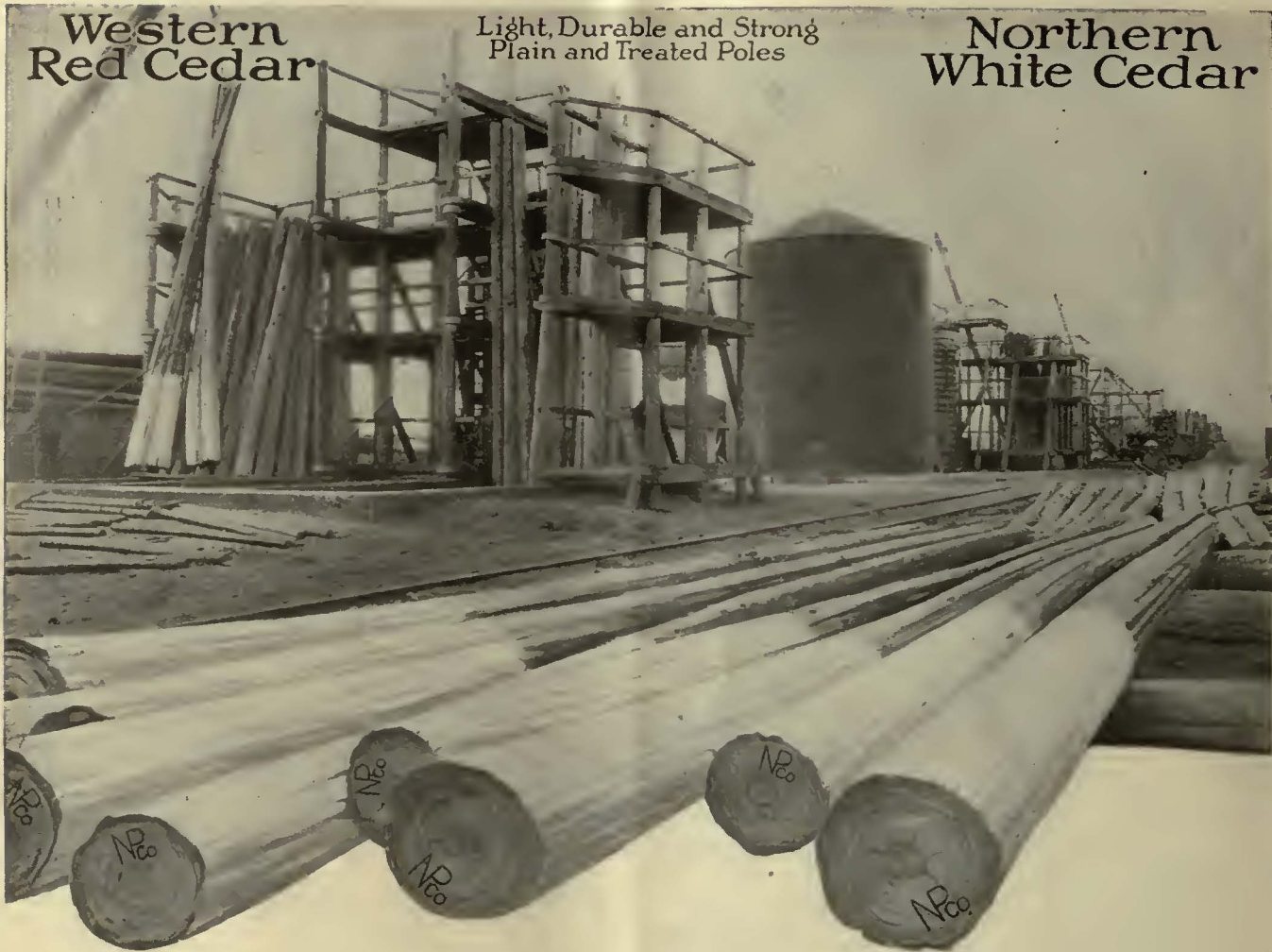
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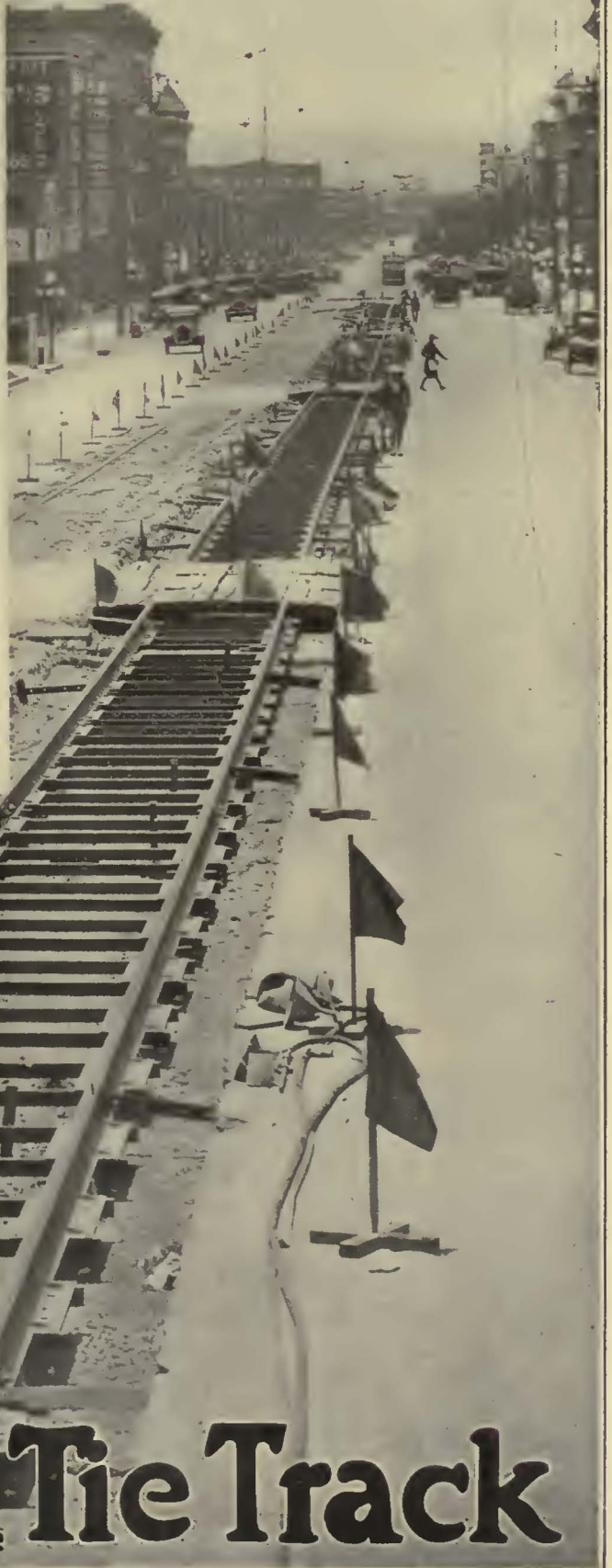
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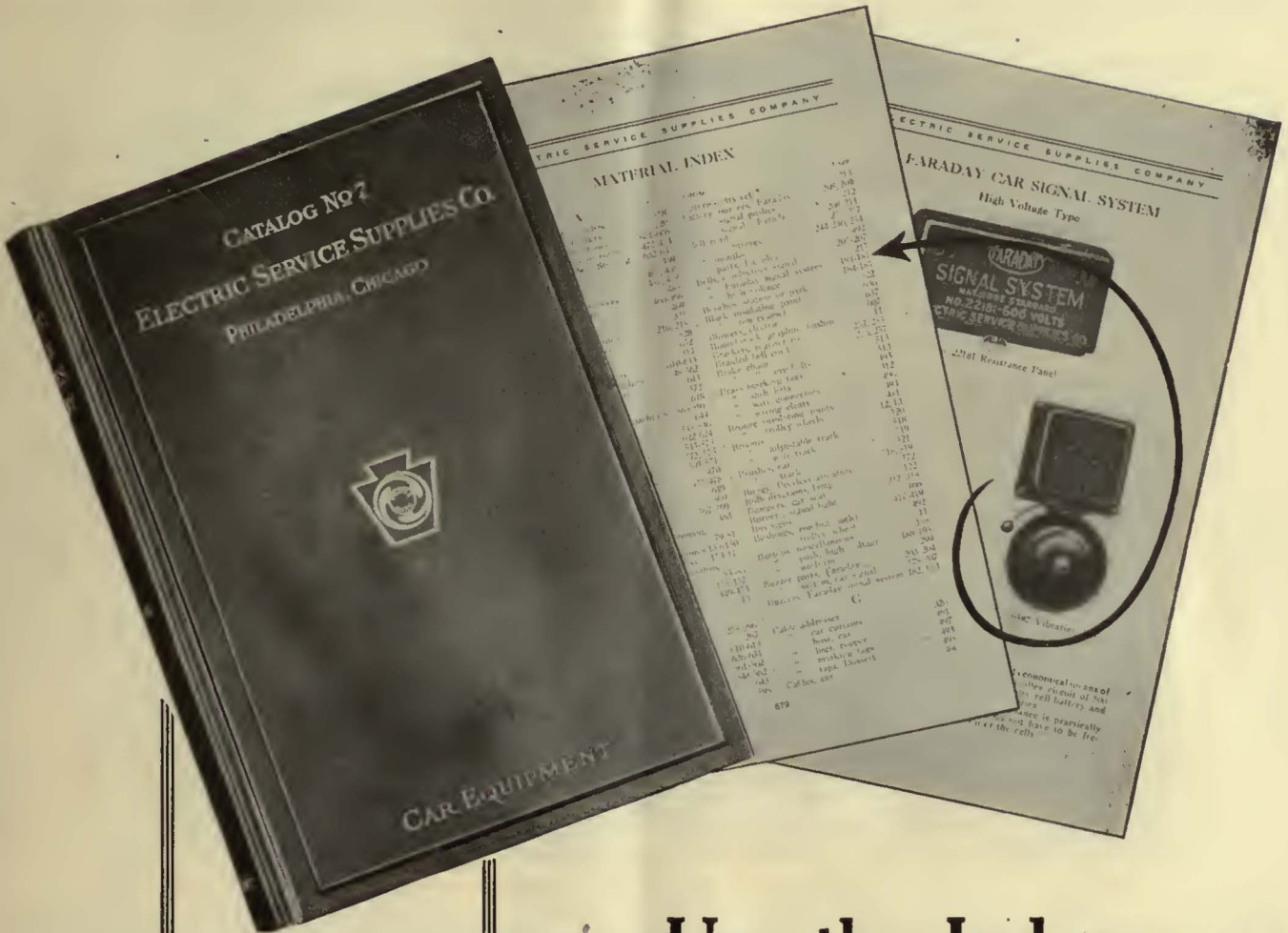
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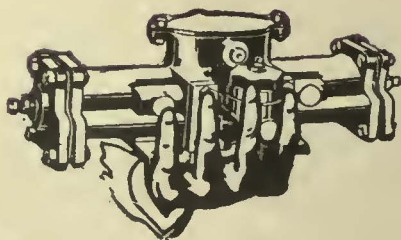
Of course he shouldn't. But—

suppose his car is late. Perhaps some passengers have riled his temper a bit. Maybe an inspector along the route has "called him down" for something. Altogether he's in anything but a complacent mood. What does anyone do under such circumstances? Naturally one vents his spleen on the first inanimate object he lays his hands on. *With the car operator, that handiest thing is the door operating equipment. Bang!* He jerks the handle with all the force of an ungoverned wrath. *He takes it out on the doors.*

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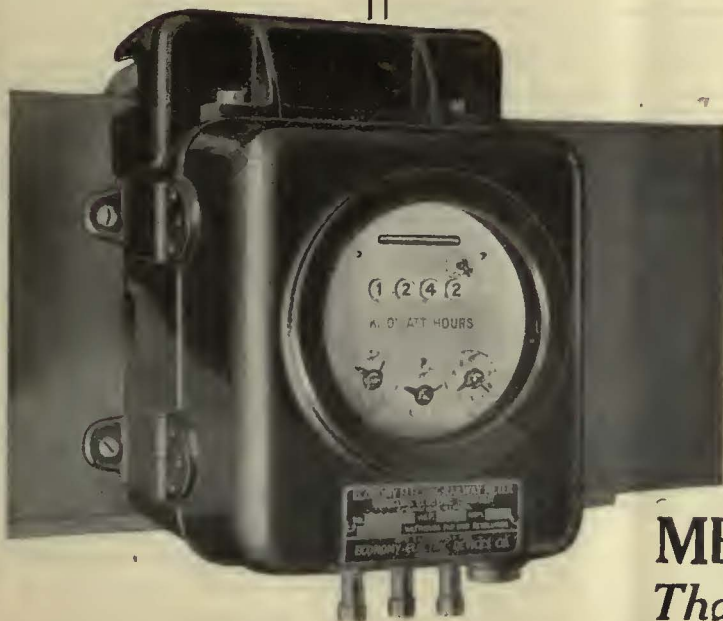
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Every railroad executive who is interested in seeing that only good ties are put into his track owes it to himself and his road to investigate *International* tie service.

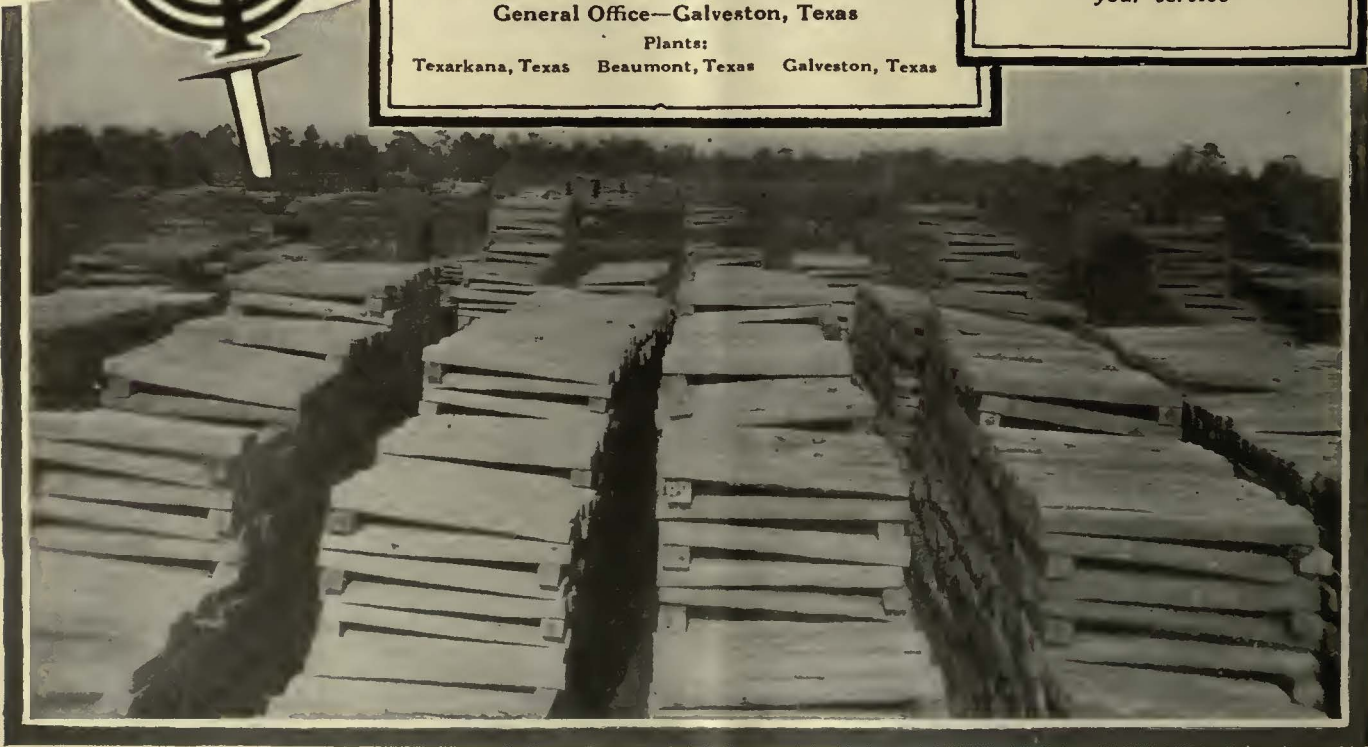
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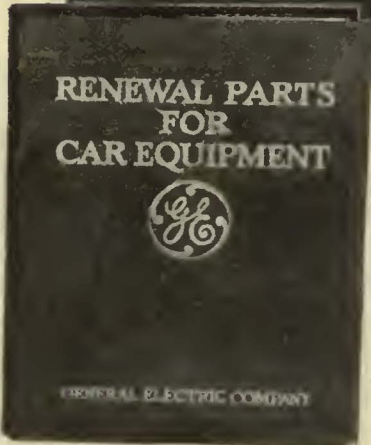
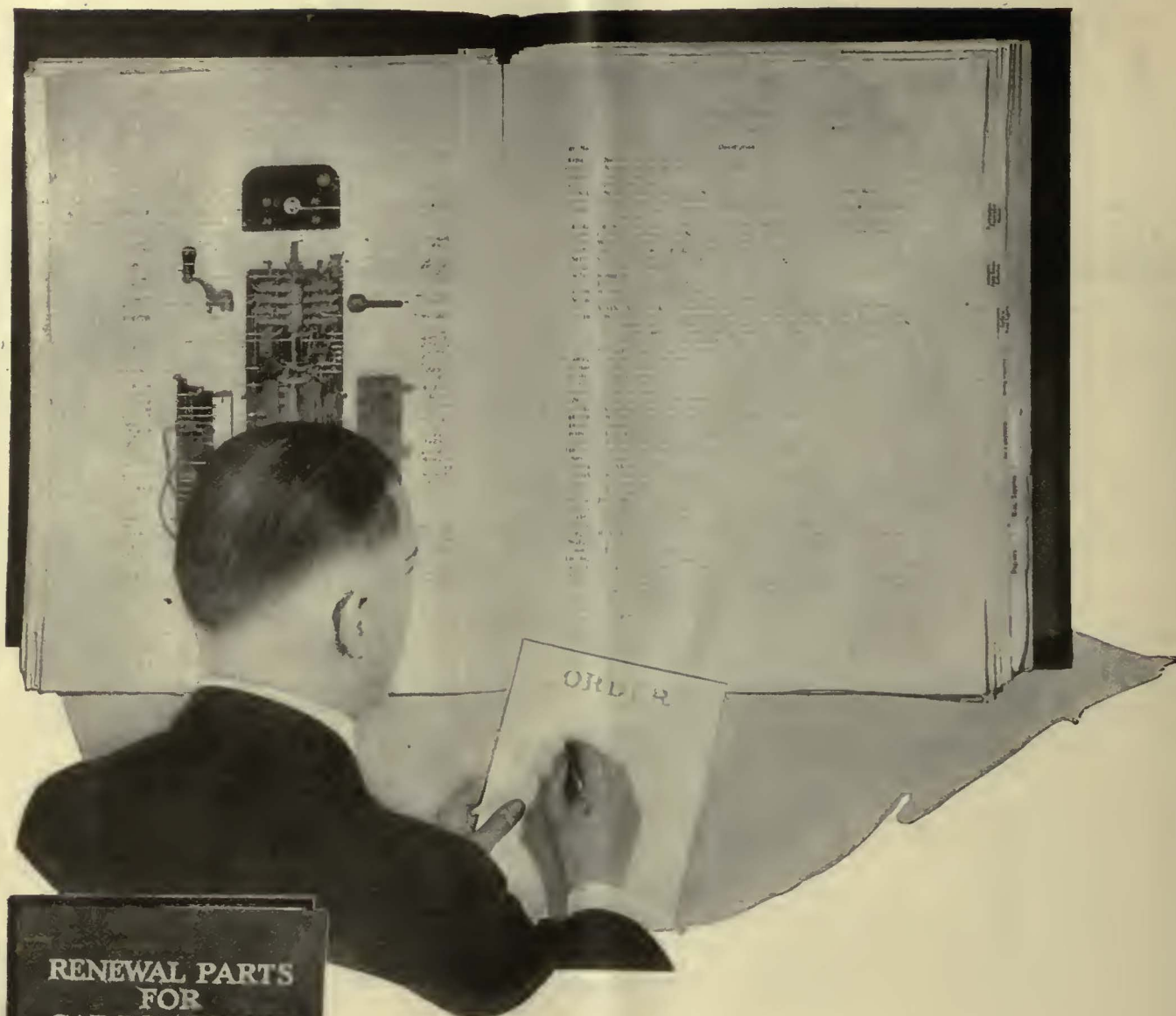
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GENERAL ELECTRIC

New York, April 12, 1924

Electric Railway Journal

Consolidation of Street Railway Journal and Electric Railway Review

Published by McGraw-Hill Company, Inc.

HENRY W. BLAKE and HARRY L. BROWN, *Editors*

Volume 63
Number 15

Rehabilitation of Property Increases Patronage

COMPARATIVE figures for the same months of this year and last year show an increase of \$14,000 in revenue for the city lines of Aurora and Elgin. These lines are part of the recently rehabilitated and reorganized Aurora, Elgin & Fox River Electric Company, the work of reconstruction having been started during last year. It is safe to say that the increase in patronage was due in large part to this work. While the public may appreciate a change in policy or management, changes with which they come in direct contact in their use of the lines, such as new cars and improved running time, are what cause people to talk favorably about the company and bring increased riding. Promises and publicity and advertising cannot produce results comparable with those that come from notably improved transportation.

In the case of the Aurora, Elgin & Fox River Electric Company, the people not only reciprocated with unprecedented patronage but in addition granted unusual franchises which relieved the company of unpaid past and future paving obligations. These two manifestations on the part of the riding public serve to indicate that the inhabitants of the Fox River Valley want, and will pay for, good electric railway transportation. Faith in this is evidenced by the fact that a power company purchased the property through the bankruptcy court.

Incidentally, 98 per cent of the stockholders of the holding company live in the territory served by the railway, which also, no doubt, is an important factor in the interest shown by the public in giving the railway a fair chance to serve. So reorganization of this property will probably shortly place it on a firm earning basis.

City Officials Should Take Unto Themselves Some of the Shortcomings of Car Service

A FAVORITE sport of city officials in many places is to criticize bitterly the quantity and quality of service supplied by the local street railway. In so doing they no doubt imagine that they strike a popular chord. Perhaps they do sometimes, for every one has experienced at one time or another vexatious delays waiting for cars and tedious trips through congested traffic after boarding cars. A fact which the city officials are likely to overlook, however, is that they are often largely responsible for such shortcomings of the transportation service.

The two major causes of public displeasure are gaps in the headway and slow speed of operation. As long as the railway service is regular and fast the public will be satisfied. Of course, attractive and commodious cars are preferred, and the passengers dislike to be too closely crowded. There is, therefore, occasional clamor for better cars and more of them. But the fact is that

scheduled headways are nearly always sufficiently short to handle the traffic properly if they are maintained. If delays and interruptions to service are largely eliminated criticism of the railway will die out.

Unfortunately the power to accomplish this end does not lie entirely in the hands of the railway. More delays are caused by conditions for which city officials are responsible than are caused by conditions for which the traction company is responsible. The number of delays resulting from such causes as vehicles traveling in the tracks, vehicles parked so that street cars cannot pass, vehicles becoming stalled on the track, slow or careless traffic officers, are more numerous than delays caused by mechanical or electrical failures of the railway equipment.

Moreover, railway operation is slowed down perhaps as much by the failure of public officials to abolish parking or to enforce existing parking regulations, and by the necessity to make unnecessary stops, as by passenger interchange. City officials would accomplish more by co-operation with the railway to eliminate delays and speed up the service than they do by criticism for public effect.

Express Service with Bus Locals May Increase Earning Power

IN THESE days of intensive use of facilities it is necessary to do everything possible to increase the productivity of the electric railway plant. If the cars can be speeded up the track is released that much more quickly for other cars, and the carrying capacity is increased accordingly. The greater speed naturally enhances the value of the service to the rider, so that more business can be looked for, provided, of course, the service is good in other respects.

How to get the increased speed is one of the most difficult problems with which a management has to contend. Nowadays every element seems to be working against speed, rather than for it. Only those who have tried to inaugurate modernization programs involving faster schedules know how difficult it is to get the cars moving and to keep them moving at a satisfactory rate.

Express service is one answer that is proposed frequently as a means of obtaining better schedules. Ordinarily its introduction necessitates that an entire street be given over to the express cars, as few systems have any means of passing one car around another. In a few cases local cars can be turned out at a junction to let the express cars by, but this is a wasteful procedure, and all the advantage gained by the fast car may easily be lost by the slow one that has to turn out.

A plan that obviates these difficulties and really gives

fast express service is that inaugurated in Providence, R. I., using electric cars for the express line and a motor bus line paralleling them on the same street for the local traffic. This method, which was described in *ELECTRIC RAILWAY JOURNAL* for March 15, page 511, has worked out to the satisfaction of the company and of the public. Where the greater part of the business is carried on the express line, and the local service demanded is relatively small, the method has advantages that indicate it may be applicable to other localities. The car, which is the more economical unit to operate, has the right of way and can travel at a comparatively high speed, reducing operating costs. Stops are relatively infrequent, so that a more comfortable service can be provided and the schedule more readily adhered to.

The bus, on the other hand, can draw up to the curb to stop for passengers, so that the advantages of this factor are obtained for the short rider who otherwise might not patronize the transportation system. On account of the smaller vehicle capacity, frequent service can be given to attract business. Co-ordinated in this manner, each class of vehicle is doing its best as a part of a system.

The advantages of such a plan are so obvious that it will be well if operators will look into it closely where there is a demand for both fast express service and frequent local service. As a feature of the modernization program it certainly is worthy of attention, if nothing more. And incidentally, this bus service in Providence is paying, and so is the railway line.

Company Publications Perform a Real Service to the Industry

INDIVIDUAL managements that are sponsors for employee magazines know the benefits that accrue to them through these publications. If this were not so the number of such publications would not have grown so rapidly as it has in the past few years.

There is another side to the matter, however. It is the industry side. In this connection an important work is being done by these publications in assisting the employees to realize the part they can play in helping to build for the company and the industry the good will of the citizens. They learn that in furthering the affairs of the companies they are strengthening their own positions, for the well-being of the industry, of the company and the employees are closely linked.

The measure of merit of these company publications does not vary greatly. It would indeed be difficult for a jury of competent judges to say which, if any, is the best. It is frequently a source of wonder, however, whether managements and men fully realize the amount of work that goes into the making of these publications. They show up unobtrusively but regularly, filled with accounts of matters that are for the most part of greater interest than we realize in the lives of the men and women of the company. It is only human to take casually things that pass before one day by day. As a result, sight is often lost of the measure of merit behind performances seemingly routine, but costly in the amount of thought, effort and time put into them.

For the benefit of managements that have recently established publications of their own, it might be well to say that of the older employee magazines, those that are performing their functions best are the ones that are edited by men who have the sympathetic support and the inspirational direction of their executives.

However capable the man may be to whom is intrusted the job of getting out a company publication, the work is only just begun with the hiring of the man who is to do the editing. He cannot make the magazine do what is desired of it unless the executive makes it a point to give him the background for executive decisions and to lead him in putting the spirit of the management into the publication so that it may permeate the more quickly through the entire organization.

The Paris Convention Would Interest Americans

IT IS fortunate for electric railways that so much of their practice is the same all over the world. This is due largely to the fact that the industry is quite a modern one. The first commercial railways were put in operation only a little more than thirty years ago. Their engineering development has followed along much the same lines in its major aspects. Partial standardization of equipment has also come about through the fact that the larger manufacturing companies in this country are also well established in Europe and have supplied much of the apparatus used on European electric railways. The same broad economic trends have affected the earnings of European tramways in the same manner as American electric railways. So it is not surprising that many of the problems with which American electric railway companies have to contend are faced also by the European companies. No doubt much can be learned by a free exchange of information such as comes with personal conference.

The forthcoming convention of the International Electric Railway Association, to be held in Paris June 16-22, affords an opportunity for such discussion, and its program, as published in the issues of this paper for Jan. 6 and March 29, indicates that many topics of interest to railway men in this country will be considered. Letters of invitation from the international association to President Budd and Secretary Welsh of the American Association show that American railway men will be welcomed at the Paris meeting.

It might be said that the international association, officially known as Union Internationale de Tramways, de Chemins de Fer d'Intérêt Local et de Transports Publics Automobiles, has a very long and honorable record as well as name. It was established in 1885, or only three years after the American Association. It has held annual (or more recently biennial) sessions ever since, in different countries in Europe, except between 1914 and 1920. The international character of the association is shown by the fact that its executive committee includes representatives from France, Belgium, Spain, Italy, Switzerland, Holland, Denmark, Poland and Norway.

The association possesses a somewhat more official character than the association in this country, owing probably to the closer governmental connections with street and interurban electric railways in most European countries than in the United States. In consequence, at each of the conventions, delegates officially representing the different governments are in attendance.

This short explanation is given for the benefit of those American railway managers who may be in Paris in June. Railway men often take trips abroad, and if those who go this summer can arrange to include attendance at the Paris meeting, they will find it eminently worth while.



New Light-Weight, Low-Floor, One-Man, Two-Man Interurban Cars Purchased to Operate Between Aurora and Elgin

Rehabilitated Property Attracts Increased Patronage

Aurora, Elgin & Fox River Electric Company Lines Re-equipped as to Cars and Power Facilities—Part of Aurora, Elgin & Chicago Railroad Released from Receivership Through Purchase by Local Power Company—New Franchises Relieve Company of Paving Burden

EXTENSIVE rehabilitation, accomplished in five months' time, has transformed the bankrupt Aurora, Elgin & Chicago, Fox River division, into a modern electric railway property. So complete has been the change that even the name was lost during the transition, and the Aurora, Elgin & Fox River Electric Company has little else other than the track to remind it of the days of the receivership.

The system is now owned and controlled by the Western United Corporation, a holding company of Aurora, of which Col. I. C. Copley is president. New cars, new substations, and new management have served to sell rides to the people of Elgin and Aurora and the Fox River Valley, who are supplying an unprecedented patronage.

This property, and the third-rail division of the Aurora, Elgin & Chicago Railroad, were operated jointly, as previously, under the same receivership from Aug. 9, 1919, to March 1, 1922. On this latter date

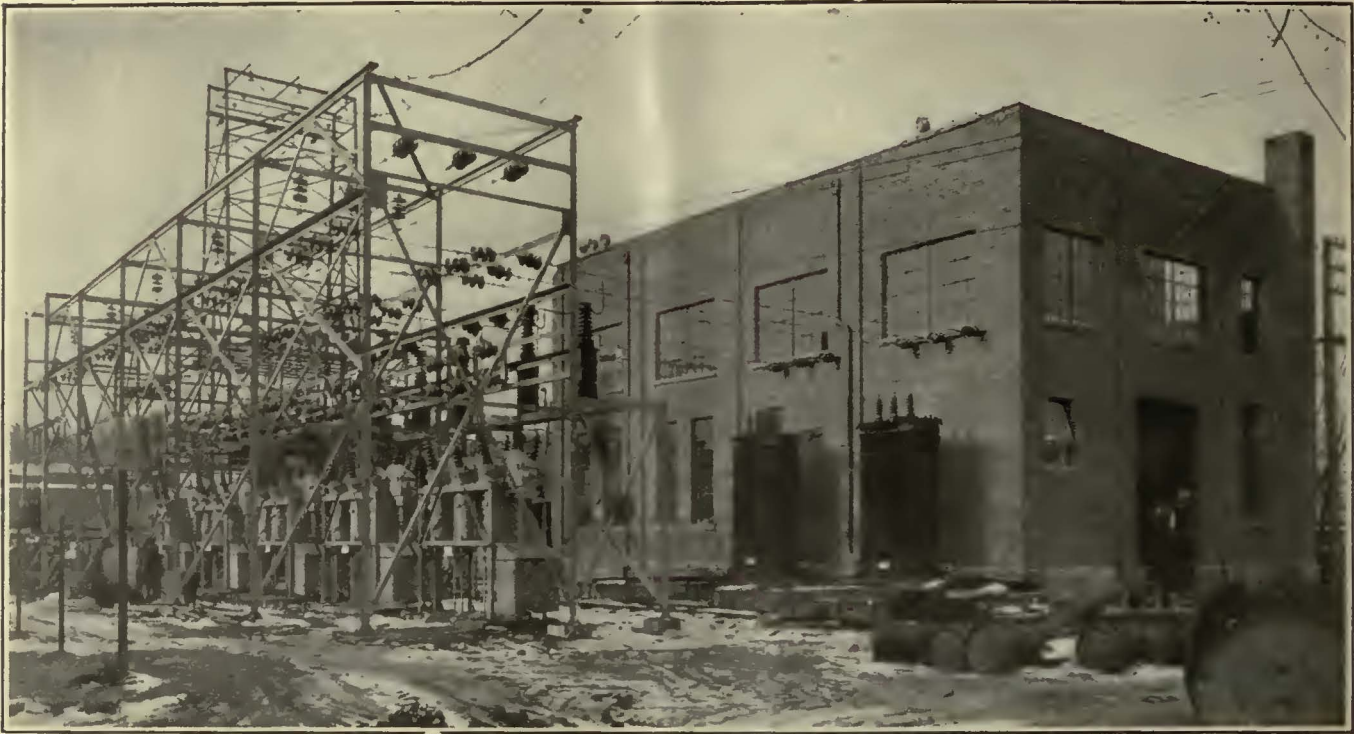
the bondholders of the Fox River division, comprising the city lines in Aurora, the city lines in Elgin, and the interurban connecting the two towns, petitioned and obtained a separate receivership. Oscar Nelson was named receiver, B. P. Alshuler was appointed attorney for the receiver, and J. F. Egolf, general manager. It

was during this receivership, which terminated on Jan. 1, 1924, with the purchase of the property by the present owners, that these improvements were made.

Old equipment and unreliable operation had caused most of the dissatisfaction and misunderstanding between the public and the company. Certain obligations and promises had not been kept, with the result that the new management's first task was to re-establish confidence with the public. The trainmen were brought together at suppers and entertainments so that their co-operation might be enlisted in carrying out the new policies of the management. A voluntary reduction in fares, both on the



Arched Headlining, Shaded Lamps, Fabrirkold Seats in New Interurban Cars



Outdoor Switching Apparatus and Transformers in Rear of Distribution Substation at Elgin



Rotary Converters and Motor Generators in Elgin Substation. Alternating-Current Switches Have Been Mounted on Balcony, with A.C. and D.C. Switchboards Below

city lines and on the interurban line, was put into effect. The old city fare of 10 cents cash and six tokens for 50 cents was changed to 10 cents cash and seven tokens for 50 cents. A 50-cent monthly card entitling bearer to ride for 5 cents, and a school children's rate of 30 rides for 90 cents, further reduced the average rate of fare. The interurban fare was reduced by offering a 25-ride coupon book between any two towns at a 2½-cent per mile rate. A 10 per cent reduction on round-trip tickets was also inaugurated.

These various measures helped to re-establish confidence between the company and the public, and within a year favorable consideration was given to the new franchises required in several cities.

NATURE OF NEW FRANCHISES

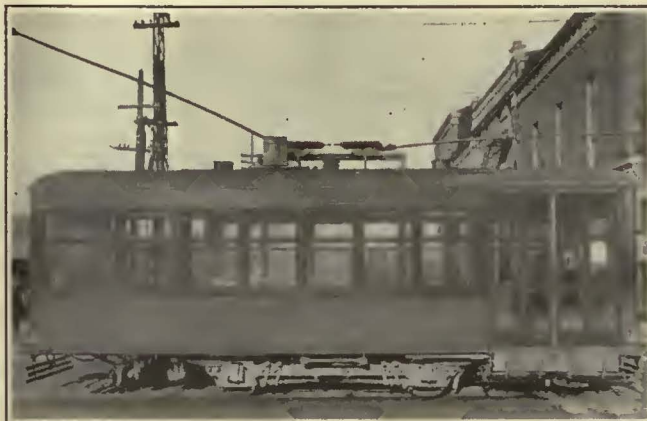
Because so many operating franchises had expired, the management found it advisable, when getting new franchises, also to revise other franchises having several years yet to run. At Aurora, a new franchise was drawn which frees the company from all future paving obligations. Similar franchises were adopted in Batavia and St. Charles, two small towns between Aurora and Elgin.

In Elgin, a different form of franchise was adopted. After meeting past paving obligations, the company is relieved of all paving and assessments for a period of five years. If at the end of this period the books of the company do not show an average of 6 per cent net return on the investment, the company is again relieved for a period of five years, and so on, throughout the duration of the 20-year franchise. If 6 per cent is made in one five-year period, assessment is to be made for the future five-year period and not for the past. In the meantime the city carries on the normal paving program.

At the time franchises were presented to the Councils or committeemen of these municipalities, Mr. Egolf explained that it was impossible to continue operations under the conditions stipulated in the old franchises. He told of the company's plan to purchase new equipment and to improve the property in general. The councilmen were thus given the opportunity of indorsing the new franchise and obtaining improved service or the alternative of rejecting it, thereby losing the advantages of electric railway transportation.

NEW SAFETY CARS

New equipment was purchased after the conditions of operation had been settled. For city operation 40 single-truck, double-door, double-end, one-man safety cars were purchased from the St. Louis Car Company. These cars weigh 18,000 lb., seat 30, including four folding seats on the rear platform. The seats are of springless rattan construction, framed in cherry. The cars are mounted on St. Louis No. 7 light-weight trucks, equipped with 26-in. wheels and two G.E. 264, 25-hp. motors controlled by K-63-M double-end control. The two doors may be opened independently or together, giving a 4-ft. opening to the platform. One of the two stanchions on the platform is equipped with a bracket for holding a Cleveland fare box. The interior of the car is finished in cherry, with white enameled Agasote headlining. The exterior of the car is painted with "traction" orange striped in black. During the winter months the side windows are covered with storm sash, made up in three sections. These are of light framed construction and cover both the upper and lower sash.



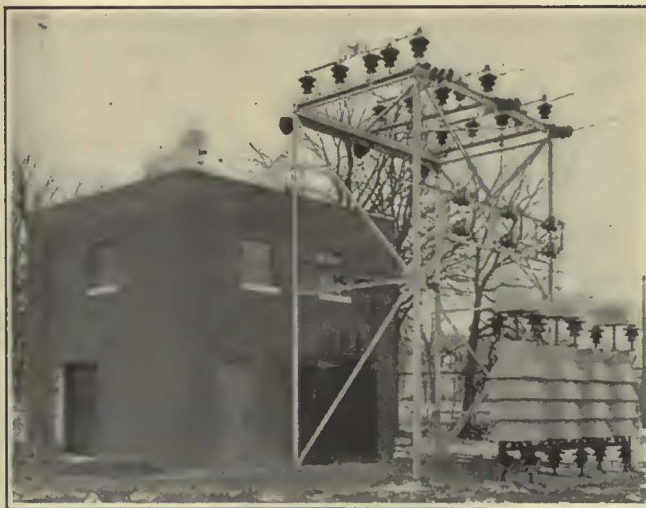
New One-Man Safety Car Purchased for City Service in Aurora and Elgin. Storm Sash Cover Both Upper and Lower Sash of Side Windows in Winter

They are held in position by bolts fastened to the side posts, and are further secured at the top to the drip rail. Another winter accessory is the Root snow scraper and track groover.

These cars averaged 1.18 kw.-hr. per car-mile energy consumption for the first month of operation. They replaced 40,000-lb., two-man, three-step cars, which had been operated at an average of 3.2 kw.-hr. per car-mile energy consumption.

CITY OPERATION IMPROVED

Twenty-four of the new cars have been placed in service in Aurora and sixteen in Elgin. Operation of city service was radically changed with the advent of the new cars. It was possible to increase the schedule speed from 8 m.p.h. to 10.4 m.p.h., which, with a greater number of cars, made possible a 10-min. headway rather than a 20-min. headway, as had been the case with the old equipment. In Aurora and Elgin frequent headway is a necessity because of the short distance between residence and business districts which invites walking if a car is not in sight. In Elgin a change in routing was effected by placing double tracks through the downtown portion of the city. This facilitated through-routing from one side of the city to the other and made possible a 12-m.p.h. schedule speed on a 12-min. headway, where the former schedule called for a 9-m.p.h. speed on a 20-min. headway. Improvements



Type of Automatic Substation Installation Made at Batavia and at St. Charles. The Building Houses a 300-Kw. Unit

in service were immediately recognized by the public, with the result that 434,470 passengers were carried in Aurora and 306,428 were carried in Elgin during the month of January, 1924. These figures, compared with 307,188 for Aurora and 246,120 for Elgin for January, 1923, indicate the increase in patronage. Comparing the same months, the revenue showed an increase in gross of \$9,000 for Aurora and \$5,000 for Elgin, making January, 1924, the best month the company has experienced.

NEW LIGHT-WEIGHT INTERURBAN CARS

Shortly after the city cars were received, seven new light-weight, one-man, two-man, double-truck, interurban cars were delivered for operation on the line between Aurora and Elgin. These cars were also built by the St. Louis Car Company, and are of the straight-side, arch-roof type, mounted on 26-in. wheels and equipped with four G.E. 265, 35-hp. motors. Complete safety equipment similar to that of a safety car has been installed in order that this car may be operated by one man should the occasion demand. Each car seats 48 passengers on St. Louis Car Company's reversible interurban seats, which are full spring cushion and back type, covered with Fabrikoid. Above the upper sash, at each side post is a hat and coat hook. The interior trim is cherry. This and the white Agasote headlining give a very light, pleasing appearance. In place of a bulkhead, aluminum stanchions and railings separate the car body from the platform, allowing an unobstructed view from the seats through the front vestibule windows. A partition with swinging door divides the car into two compartments, one of which is used for smoking. A toilet has been provided in one corner of the main compartment.

Illumination of the car is accomplished by a row of 92-watt lamps with shades mounted on the headlining above the aisle. The platform areas are illuminated by five 32-watt lamps. Besides these lights, two emergency lamps are provided, operated from a 6-volt battery, for illuminating the interior of the car in case the trolley voltage fails. A thermostatically-controlled electric heater has been placed under each seat to maintain a temperature of 60 deg. F. Ventilation is taken care of by 12 St. Louis ventilators spaced six on each side of the roof.

A slight ramp in the aisle connects the floor of the body with that of the platform, and a transverse ramp from the center of the platform to the double entrance and exit doors makes the entrance level $3\frac{1}{2}$ in. below that of the car body floor. These cars are equipped

with safety devices and air-operated doors and step. A single folding door at the rear on the right-hand side, operated by hand, serves as an entrance when the car is operated by two men.

Streamline appearance has been obtained in the design by continuing the arch roof over the vestibules. Gothic shaped Florentine glass is used in the upper sash over each pair of windows, and an individual single sash window has been placed in each of the four panels at the corners of the car body. During the winter, storm sash made up in five sections cover both upper and lower sash, and are held in position by the drip rail at the top and by means of bolts at the belt rail and on the side posts. These are constructed of $\frac{3}{4}$ -in. cherry with the upper portion shaped to conform with the design of the upper sash of the windows.

A set of two marker lights has been placed at each end of the car above the end windows on the vestibule corner posts. These serve as indicating markers on the front end of the car and as tail lights at the rear end. In normal operation each set of marker lights is illuminated by a lamp operating as part of a five in series circuit. In case of a power failure, illumination is supplied by a 6-volt lamp mounted beside the high-voltage lamp. These four low-voltage lamps, one in each marker box, with two lamps in the car interior, are operated from a 6-volt, 120-amp.-hr. storage battery located in the toilet. This battery is charged in series with the five marker lamps from the trolley voltage. A relay cuts in the 6-volt circuit automatically when the trolley voltage is off. This arrangement does away with oil lamps and lanterns for marking purposes, and at the same time insures protection in case the line voltage fails.

NATURE OF INTERURBAN OPERATION

The interurban operation is more nearly suburban in character, because of the many adjoining small towns between Aurora and Elgin. In the 22 miles there are 50 regular stops, with 52 additional stops made on signal. During the day an hourly service is rendered, which is increased to 30 min. during the rush period. A schedule speed of $16\frac{1}{2}$ m.p.h. makes it possible to complete the run in 1 hr. and 20 min.

The zone system of fare collection is employed, the distance between Aurora and Elgin being divided into 31 zones. No fare box or register is used, the conductor collecting the fare and giving a "hat check" receipt, upon which is some figure or mark designating the zone to which the passenger is entitled to ride. The checks are carried in holders mounted on each



"Selling" the Road to the Communities. One of the Interurban Parties Attended by the

side post and are taken up by the conductor as the car passes through the zone preceding the one to which the passenger is entitled to ride. This system met with the disapproval of the passengers at first, because of the necessity of keeping the check in sight. The conductor is placed entirely on his honor in the handling of cash fares, and the company thinks that the system has worked out as satisfactorily as the more elaborate systems involving fare boxes and registers.

POWER REQUIREMENTS

Power for the railway operation and for lighting purposes in Elgin had been obtained from the third-rail division of the Aurora, Elgin & Chicago Railroad. The contract under which the power was delivered expired on Jan. 1, 1924, and notification that this contract would not be renewed was sent to the Fox River division in November, 1922. Negotiations were immediately opened with the local power company at Aurora for the purchase of alternating-current high-voltage energy. A contract was closed for 10,000 kva. of 33,000-volt energy. As the capacity of the Aurora generating plant was such that it could not handle this load, two 7,500-kva. turbine-alternator units and the necessary boilers were purchased and mounted in an addition to the power company's plant. This more than doubled the capacity of the generating plant and involved an expenditure of more than \$1,000,000, but was accomplished in the remarkably short time of five months.

As the third-rail division had delivered the railway energy at 600 volts direct current, the Fox River division was not prepared to convert high-tension a.c. energy into 600-volt d.c. Consequently, the railway company was required to construct a three-phase high-tension pole line from the generating plant in Aurora to the distributing center in Elgin, a distance of 22 miles, with taps at St. Charles and Batavia for two d.c. substations.

At Elgin the railway company does a general lighting business, supplying the city with both d.c. and a.c. energy for light and power purposes. This energy had been purchased at the proper voltage for distribution. With the advent of the 33,000-volt line from Aurora it was necessary to construct a building to house two 500-kw. hand-operated rotary converters for the railway power requirements, two 300-kw. motor-generator sets for d.c. commercial power requirements, and the necessary regulators and switchboards for operating the station as a power and lighting distributing center. The power transformers, regulating transformers, oil

switches and lightning arresters have been mounted in the yard to the rear of the building. The building installations were completed in five months, the new equipment going on the line on Dec. 28, 1923, just three days before the contract with the third rail division expired.

Trolley voltage is maintained by two 500-kw. hand-operated rotary converters mounted in the addition to the power plant at Aurora, two 500-kw. hand-operated machines in the distributing center at Elgin and two substations along the interurban line, one at St. Charles and one at Batavia. Each of these installations is of 300-kw. capacity with full automatic control. The rotary and switchboard are housed in the conventional type of brick building with ventilators on the roof and louvers in the walls near the floor level. The high-tension feed for each substation is carried on a steel framework, which supports the fuse and choke coil for each phase. This framework, the lightning arresters and transformer are mounted in the yard adjacent to the building. The transformer is connected to the line at all times and is protected by choke coils, while the line in turn is protected by a high-tension fuse in each phase. An aluminum lightning arrester is connected to each phase through a disconnect switch. These substations, the distributing center at Elgin and the power plant addition at Aurora were equipped by the General Electric Company.

FINANCED BY LOCAL MONEY

The Western United Corporation, the holding company of the Western United Gas & Electric Company, the local power company at Aurora, became interested in the railway property and purchased it through the bankruptcy court. The outstanding obligations of the railway company are: \$2,500,000 of preferred stock, \$2,500,000 of common stock, and \$250,000 surplus replacement reserve. All of the new equipment was purchased on money obtained through the sale of receivers' certificates, which have since been refunded by bonds of the new company. There are 3,000 stockholders of the holding company; that is, the Western United Corporation, and of this number 98 per cent live in Aurora or the adjoining territory. The local bond houses and banks of Aurora handle all of the finances of the corporation. This places the railway property on a customer-ownership basis, whereby the public, through ownership of stocks and bonds, furnishes the capital for rehabilitation work and in turn derives a return on the investment in the form of dividends and service.



City Councils of All of the Municipalities Through Which the New Cars Operate

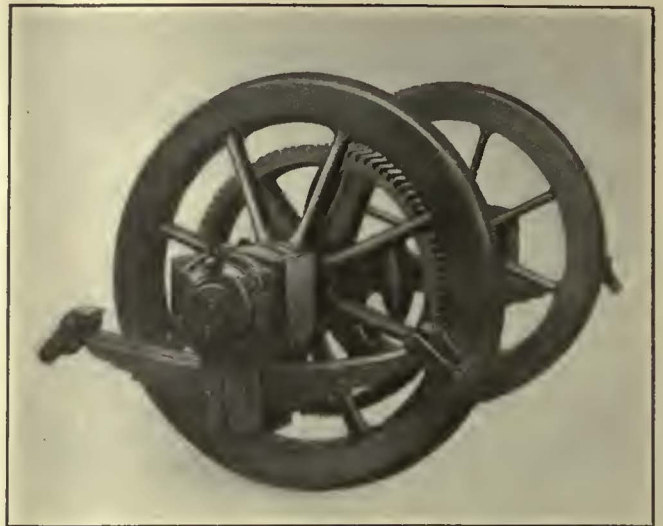
New German Cars Have Unique Features

Thin Castings for Truck Side Frames—Special Leaf Springs Used—All Bearings Are Roller Type—Air for Motors Taken In at Roof—Doors on Ball Bearings

SOME interesting details of the construction of thirty new cars added to the rolling stock of the Krefeld Street Railway system (Germany) is given in *Verkehrstechnik* for Sept. 7, 1923. This is a meter gage electric railway and the cars are 34 ft. 4½ in. long, 7 ft. 1½ in. wide and 10 ft. 8¾ in. high. Seats are provided for twenty-two passengers, with additional room for twenty-five standing passengers. Single trucks are used which have a wheelbase of 9 ft. 9 in.

The construction of the trucks is of particular interest, as the side plates are cast of extremely thin electro-furnace steel. These plates have a strength of from 600 to 700 lb. per square inch and an elongation of 20 per. cent. After the frames were cast they were annealed for several days. All supporting bosses for the brake rigging, motor suspensions and cross beams are cast in one piece with the main plates. The brake shoe heads are rigidly connected by a cross bar. This eliminates side motion and provides a uniform setting so as to utilize the full surface of the brake shoes. The diameter of the wheels is 35.1 in.

The spring suspensions for the body and the truck are also of particular interest. Leaf springs are used under the center of each axle. These are held in place by a single wide block. The springs are 31.2 in. long and 3.9 in. wide. They are composed of eight individual leaves, having a cross-section of 3.9 in. x 0.39 in. Additional leaf springs are provided for supporting the car body. These are 46.8 in. long and 9-ply. The cross-

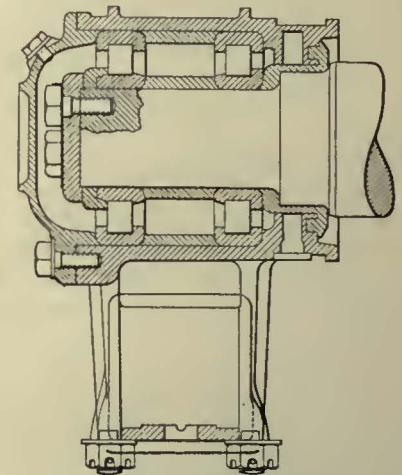
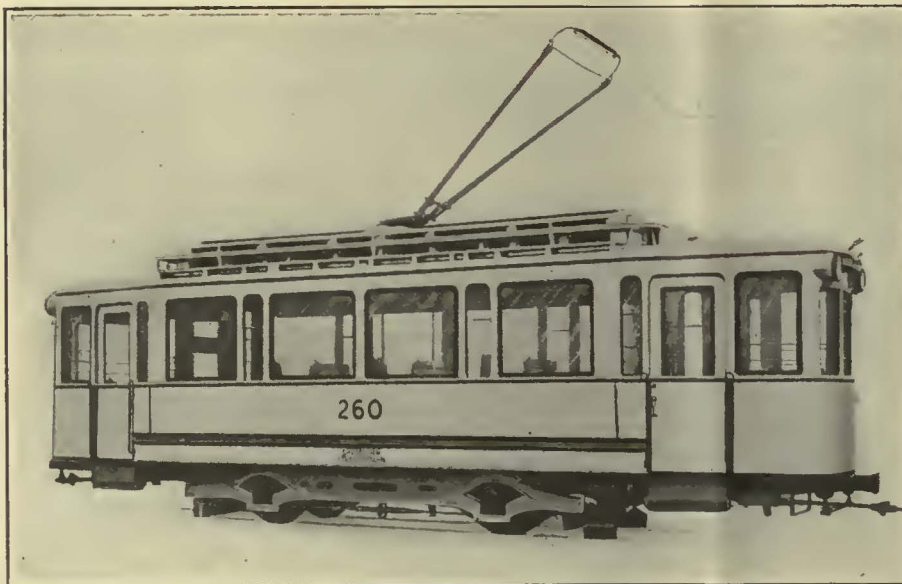


Roller Bearing Construction Used for Journals

by taking off this cap, leaving the inner smooth guide ring on the shaft, thus assuring proper reassembling. Provision is made for packing the bearing with a special paste so as to make it watertight. The inner side of the bearing is equipped with a stuffing box and all bearings have sufficiently large internal pockets to hold enough lubricant for several days operation.

These cars are intended for operation with a trailer and a draw bar is provided which will pull the truck and car body at the same time. The coupler has a hinged crosshead with an adjustable conical bolt to avoid excessive motion.

The car body construction consists of oak upon a steel skeleton. Pressed steel is used for the main and cross girders. The platforms are completely inclosed and all doors are single and 25.35 in. wide. The doors



At Left, New Type Car Used in Germany. The Line Drawing Shows Type of Spring Suspension Provided Between Truck Frames and Axles

section is the same as the truck axle springs. Exceptionally thin spring leaves have been chosen after an extended investigation and are giving very good results.

All bearings are of S.K.F. precision roller type with no side play. A special arrangement of the cage rings prevents edging of the individual rollers. The outer guide rings of the rollers are held in place with a cap over the end of the shaft, and this is fastened to the shaft by three small screws. Rollers can be removed

are mounted on ball bearings with adjustable ball races. A special lock permits opening of the doors from both sides. By closing two side panel doors against a permanent narrow center panel, an inclosed compartment is provided for the motorman.

The motors are A.E.G. with commutating poles and self-ventilation. The armatures have S.K.F. roller bearings and a very small air gap. Air for cooling the motors comes from the roof of the car through a duct.

This duct has a filter to keep out grit or dust, and a tin cap covers the intake to prevent rain from entering.

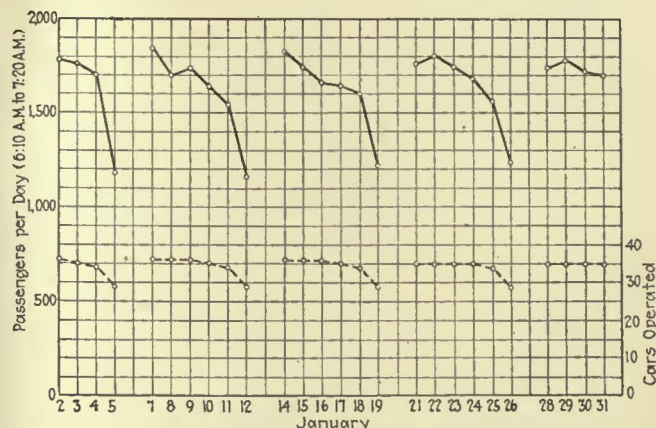
The current collector is of the bow type with a carbon contact edge. The trolley pole can be raised or lowered from within the platforms. The starting resistors are mounted on the roof. Illumination of the car is from lamps arranged in three circuits, each with four lamps in series. All circuits contain automatic ballast resistors, consisting of iron wires in hydrogen gas, such as are commonly used in Europe. This causes the lamps to burn uniformly on voltages varying between 550 and 750.

Variable Mill Riding Requires Careful Checking

Early Morning Peak Serves as a Barometer for the Regulation of Schedules in New Bedford—Modern Light-Weight Cars Have Been Purchased to Assist in Handling This Traffic

THE principal industry of New Bedford, Mass., is the manufacture of cotton cloth and yarn, and traffic on the Union Street Railways varies directly according to the prosperity or depression of this industry. Riding in the morning prior to 7:30 o'clock is confined almost entirely to mill employees and constitutes the morning peak on the railway. It is subject to peculiar fluctuations and in some respects serves as a barometer of what the traffic will be throughout the day. An increase in the morning mill riding usually indicates that there will be an increase in all other riding during the day. For this reason the railway makes a very careful check of the morning rush hour daily and regulates its schedules for the remainder of the day from that.

Geographically the city of New Bedford is divided into three distinct districts, the north, center and south. Each district is covered by a uniformed railway inspector during the hours that the cars are operated, who from 6 a.m. to 7:30 a.m. week days is stationed at



Manner in Which the Morning Peak Riding Is Plotted for Comparison with Other Days in Order to Adjust Service for the Balance of the Day

the point of heaviest loading in his territory. He records on a checking card the scheduled and actual time of arrival of every car and the number of passengers carried. These cards are turned in to the office of the superintendent of transportation before 8:30 o'clock the same morning.

It was formerly the practice of the Union Street Railway to check its traffic by totaling the conductor's reports of register readings on the cars. Experience showed, however, that this was a misleading figure, because the difference between the maximum load on the car at any one time and the total number of passengers carried on a trip was variable. For this reason the method was adopted of checking by actual count at the point of heaviest load.

Each morning after the inspector's checks are received in the office, the figures are copied on a large traffic sheet made especially for the purpose, and plotted. The total number of passengers carried during the morning rush hour and the number of cars operated are plotted separately for each district. Riding for that particular morning is then compared with other mornings of the same week and with riding for the cor-



This Type of Modern Light-Weight Car Has Succeeded in the Service in New Bedford

responding day of previous weeks. This comparison provides an accurate forecast of what the railway's passenger traffic will be for the entire day. The method of plotting these figures is shown in an accompanying illustration. From this chart for one particular division it will be noted that the riding varies considerably from day to day, being consistently less in the latter part of each week, with a very decided drop on Saturday morning. Part time working of the mills is the explanation of this phenomenon. Each district has characteristics of its own, however, one being quite even throughout the week and another declining very sharply as in the case illustrated.

This system of checking makes it possible to regulate the service for the remainder of the day according to the riding during the morning rush. The time-tables are so arranged that many of the tripper runs can be allowed to remain in the carhouse without disorganizing the schedules. As soon as the inspectors' morning checks have been received by the transportation officials, it is decided what trippers will be operated that evening. A list of the tripper runs to go out in the afternoon is then posted on the bulletin board. However, as only about one-half of the evening rush-hour traffic is composed of mill employees, it is necessary to consider also some other factors when deciding how many trippers shall be run.

Modern light-weight two-man cars suitable for handling the rush-hour traffic in New Bedford have recently been purchased by the railway. A saving in weight of 6 tons per car has been accomplished, the new type weighing only 30,000 lb. They are equipped with four Westinghouse No. 508 motors per car, giving a total horsepower of 100 as compared with 160 hp. for the older cars. The wheel diameter has been reduced from 33 in. to 27 in. No change has been made in the seating capacity, and the new cars are the same length as the older type. The lower steps and wider doors, as well as the absence of the end bulkheads, make for more rapid loading and unloading. These cars have proved particularly well adapted to the service for which they were bought. At the same time their attractive appearance, resulting from pleasing lines and careful painting, created a favorable impression on the general public.

Hose Jumpers Sent to Every Fire

THE track layout in the city of Providence, R. I., is such that emergency rerouting in case of fire in the downtown business district is somewhat difficult. In order to prevent tieups of the street railway system, as far as possible, the company has established the practice of sending hose jumpers to every fire occurring along streets used by the cars. The jumpers are carried on a small railway car kept in a central location expressly for this purpose.

The city fire alarm system has been connected up with the office of the superintendent of transportation, and every alarm rings there as well as at fire headquarters. On a near-by wall is posted a list of the boxes and immediately upon the sounding of an alarm examination is made to see if the fire is located along the railway tracks. If it is, word is at once sent to the emergency car, which proceeds with the hose jumpers to the location of the alarm. These devices thus come in for frequent use and they have saved the railway many serious delays.

Public Relations in San Diego*

Railway Company Has Developed a Number of Ways to Cultivate Good Public Relations—Rendering of Special Service Is a Feature

THE San Diego Electric Railway has developed some rather unusual ways for improving the good public relations which have always existed in the city of San Diego. The company has made an effort, at various carnivals and affairs held during the year under auspices of county and city organizations, to erect education booths, where by means of maps, charts and diagrams a story of the company and its relationship to the citizens has been shown graphically. Some representative of the executive department, or sometimes a platform man, has occupied at these booths to answer questions and to deliver impromptu explanatory talks upon such subjects as visitors might indicate by their queries. The relationship established through these contacts has been continued by encouraging the participation of the employees of the company in civic affairs and in various fraternal and social organizations. Particularly has membership in district improvement clubs and in church and social groups been encouraged.

At the end of one of the company's lines it has maintained at its own expense one of the most beautiful flower gardens in southern California. This is at Mission Cliff Gardens, as the reservation is called. It is the site of most of the reunions and state picnics which are a part of California life, and is kept attractive at all times by an ample force of gardeners and caretakers. No admission is charged. The company's interest in similar undertakings conducted under public or semi-public auspices is shown by its support of a zoological society, organized during the past year. Free service has also frequently been given for outings and picnics by orphanages. A girls' club, made up of young women employees of the company, has been encouraged by the company to contribute its social hours, money and material to the various welfare organizations of the city.

Not the least of the accomplishments in this direction has been the co-operation which the company has given to the local office of the United States Veterans' Bureau, rehabilitating men disabled in the war. A number of these veterans are in what is known as "Placement Training," that is, they are learning with the company under government supervision the trades and occupations which will fit them again to be self-supporting. If possible the company employs the graduates.

The company carries on its payroll a man who is stationed every day in the Plaza, a park in the heart of the city, which is a favorite starting point for tourists, and it is his business to answer all questions and give all directions requested pertaining to local points of interest. This information clerk has answered as many as 7,000 questions in a single day, and on an average Sunday morning he directs some 250 to 300 persons to churches.

Finally, the company has made a special effort to serve any particular transportation need which may exist in the community. Thus, it has established bus feeder lines to districts not adequately served by the trolley line, and it has contracted with the school board to give a special service to the high school.

*This article is based on material included in the brief submitted to the Charles A. Coffin Prize Committee of the American Electric Railway Association by the company named.

Toronto's Two and a Half Years of M. O.

Operating Success to Date May Be Attributed Largely to the Integrity and Progressiveness of the Management, Rather than to Municipal Ownership
—The Property Has Been Completely Rehabilitated and the Principal Lines Rerouted—Many Other Improvements Made

By "Observer"

ENOUGH time has elapsed since the city took over the lines of the Toronto Railway Company on Sept. 1, 1921, that some idea can be obtained of the progress made under municipal operation. Unlike some other municipal properties, every effort has been made to give real service and provide the city with a good and modern transportation system.

Canada is more given to municipal ownership than the United States. Several of the smaller electric railway properties are owned by the municipalities. Then, too, one cannot overlook the great "Hydro" system which supplies the greater part of Ontario with electrical energy from Niagara at reasonable rates. The way this project has taken with the public is noticeable in the housefurnishing stores, where electric ranges are on display. They are advertised in the newspapers as commonly as gas ranges are on this part of the continent. The Canadian National Railways is another example of government ownership on a scale far larger than anything attempted in the United States.

Toronto is the largest city in the Province of Ontario, and is running a close second for the greatest population in all Canada, with about 550,000 inhabitants. Its growth has been quite rapid, and unless some unforeseen condition halts its progress, it will not be surprising if it passes Montreal within the next few years. While there is considerable manufacturing, the city is more of a commercial center, the distribution of merchandise being a leading activity. This is inevitable, as the city is situated on the northern shore of Lake Ontario, with a fine natural harbor formed by an island directly off shore. Rail transportation is furnished by the Canadian National Railways and the Canadian Pacific, the two great railway systems of the Dominion.

Since the railways are located along the waterfront, the business section of the city naturally began its development close to the harbor. Yonge Street, the principal thoroughfare, runs back directly northward and at right angles to the lake front. Its intersection with King Street, a few blocks away, was formerly the business center, but in recent years there has been a trend uptown, so that now the retail district is closer to Queen Street, which is four blocks further back. Thus the stores are concentrated in a relatively small area, a condition that tends toward serious congestion similar to that in the average city of the United States.

For a long time previous to municipal operation the street railway system was on the down grade. The tracks and the cars were badly in need of repair, and the facilities for housing the cars and for doing the repair work became more inadequate as time went on. This condition was in part due to the determination of the city to obtain control of the property and to operate it as a municipal enterprise, which kept the owners from investing new capital. The story of the proceedings has been recounted in detail in this paper. It

culminated in the purchase of the property by the city in 1921, the price being settled by a board of arbitration after a long drawn out series of hearings.

One factor that has contributed in no small degree to the success of the enterprise is the non-political character of its control. This has been divorced entirely from the local political fields, being in the hands of a non-partisan commission of three men chosen on the basis of their business ability. In their turn, they have adopted the same method in the selection of the active management. H. H. Couzens, who has been general manager from the beginning of municipal operation in Toronto, had already made an enviable record as an executive when he took charge of the system. That his administration was successful is attested to by his recent selection for the vice-presidency of the subsidiary companies of the Brazilian Traction, Light & Power Company, a private enterprise. The esteem in which Mr. Couzens is held locally is attested to by the commendatory editorial comment in all the Toronto papers on the announcement of his new connection, no matter what their political complexion.

The same policy of non-partisan control has been continued with the promotion of D. W. Harvey, who has made an excellent record as assistant manager under Mr. Couzens, and who will succeed him.

REHABILITATION OF THE PROPERTY WAS A REAL PROBLEM

A big problem of rehabilitation faced these men when they took control of the property. In addition to the Toronto Railway, there were several so-called civic lines that had been built by the city to serve outlying districts in which the old company had failed to make extensions. These had to be tied in and coordinated with the rest of the system. This situation required an extensive program of track reconstruction, in which all but about 50 miles was rebuilt. Then the portions of the radial lines located within the city limits were added, so that today the commission operates all the street railway track in the city.

The condition of the property when it was taken over ranged from 55 to 90 per cent, according to the engineers who testified at the arbitration hearings, an average figure being about 74 per cent. This indicates a standard much lower than that found on the average American property in fair operating condition, which will run about 85 per cent.

Quantity production methods had to be worked out for the construction of the track, but the proposition was handled so well that all of the work was done during the past two seasons and this year's construction program will be quite small, the track all being in good condition. The construction methods used were described in this paper, issue of April 1, 1922.

The rolling stock was all of it old, the greater por-

tion being of the types familiar a generation ago. Trailer trains of single-truck cars were familiar sights in the rush hours right up to the time the city took hold. Within two years rolling stock was purchased to meet all the requirements, except for a few of the lighter lines where it was felt that the older cars could be remodeled to advantage. This work has now been done, so that all of the cars in service are either new or have been thoroughly overhauled within the past two years. On all the heavy lines trains of pay-as-you-pass motor cars and center entrance trailers are in use. Improvements of many kinds have been incorporated in these cars, the three-door design of the trailer being unique. These cars were described in detail in *ELECTRIC RAILWAY JOURNAL* for June 23, 1923.

The best of the old cars have been overhauled and are in service on lines where the duty is not so severe. Thirteen of them have been re-equipped for one-man operation.

The carhouses were inadequate to care for the old rolling stock, and entirely unsuitable for the new large cars. This necessitated the construction of a series of carhouses and storage yards of modern design.

Proper facilities for overhauling cars were almost entirely lacking when the commission began its work. A new shop, with a capacity for handling fully twice the number of cars in active service, has been placed in service within the past month. This has all the latest facilities for rapid handling of equipment and economical operations. A complete description will be published in an early issue of this paper.

That the commission has had the funds with which to make these radical improvements is due largely to the foresight displayed at the outset in fixing a rate of fare that was sufficient to provide enough revenue to leave a surplus after paying normal operating expenses. The fare had been 5 cents for years. Even before the beginning of city operation, the announcement was made that the fare under the new control would be 7 cents cash, or four tickets for 25 cents. Children's fares were raised proportionately.

The increase in fares caused considerable adverse criticism from those who had expected some form of magic from municipal operation, but they have long since forgotten their displeasure in view of the improved service rendered.

Another move made at the beginning was the cancellation of licenses of all competing buses. These had given the old company some trouble, and had caused a loss of revenue. This did not have to be faced by the commission, making it somewhat easier to handle the situation.

The result of these arrangements and improvements has been that the system is now able to give real service to the city. The increase in rate of fare did not affect all the riders, as the civic lines, which were taken over by the commission, formerly had collected an additional fare of 2 cents above that charged by the company. Through service was given on these lines, thus making them an integral part of the system.

It soon was found that the routes as formerly laid out did not serve the city at all well. There was too much duplication of service, and the congestion in the heart of the city was bad. A few minor changes were made as quickly as possible, but in July, 1923, the principal routes were changed quite radically. There was a material saving effected by the rerouting, but

the major part of it was put back into service. The service given in the non-rush seems to be more than adequate, while in the rush hours the capacity furnished is apparently ample to handle the loads without undue crowding. If anything, the service could stand a reduction. Then, too, there is practically no short-routing of cars except on a few lines in the rush hours. Many cars go through to the outer terminals with light loads, and the routes are so long that there is no chance for cars to make second trips in the rush.

BUSES AND TROLLEY BUSES ARE ALSO USED

Advantage has been taken of all available means of transportation. Both gas buses and trolley buses are in use on certain of the outlying lines, where it has not been felt that rail service would be justified at present. These vehicles are being operated strictly as adjuncts to the trolley cars, and it is stated that the rails will be extended in each case if the business warrants. The buses used are of the most modern types, and they are maintained on the same standards as have been adopted for the cars.

The organization is much the same as that of a private company. There is no difference in the attitude of the department heads toward their work. They appear as anxious to keep down expenditures and obtain maximum results as men in similar positions anywhere. In fact, they seem to take pride in the fact that they can do things better than their competitors. All positions are under the control of the general manager, which in itself indicates the desire to keep political appointees out of office.

The platform men seem well trained and courteous. They appear to be working for the interests of their employers as much as in any private corporation. They are unionized, but up to the present time there has been no conflict with the management. They have requested vacations with pay similar to those of monthly employees, but have accepted the statement that such concessions cannot be granted to men working by the hour and being paid for overtime.

A good point noticed was the method of determining what children should pay full fare. In each car a mark is made on a stanchion or some other vertical part 51 in. from the floor. If the child is under this height he pays half fare, if above, full fare. This eliminates disputes and makes it unnecessary for parents or children to resort to perjury.

A factor which is the source of serious concern to the management is the competition of private automobiles. The past winter was very mild until February, and many people kept their machines in service, with the result that the receipts were slightly lower than for the previous year. In February, however, the weather was quite bad and there was a heavy fall of snow, with the result that the automobiles remained in their garages and the people rode the cars, producing an increase in business over last year. Even though it is a municipal enterprise, it must face adverse conditions, just as the private company.

Altogether, the public seems well pleased with the venture in municipal ownership. Of course there is the contrast with what had gone before, so that the service has been a distinct improvement. It ranks as good service, however, when measured by the standard of any American city, and is far better than some of the private operations one might mention.

Unified Traffic Control Tried in Los Angeles

Movement of Motor Vehicles in the Congested Area Has Been Facilitated, but Railway Operation Has Been Slowed Down Considerably

THE Los Angeles Railway has found the unified traffic control system installed three years ago a handicap to its operation. Comments on this subject were made by G. B. Anderson, manager of transportation Los Angeles Railway, at the Midyear Meeting of the American Electric Railway Association at St. Louis March 4, as noted on page 372 of the *ELECTRIC RAILWAY JOURNAL* for March 8, 1924. In the opinion of the railway there is no automatic signal that can handle traffic as expeditiously as a manually operated signal when the latter is in charge of a competent man.

Prior to 1921 the handling of traffic in Los Angeles was accomplished by stationing a patrolman at each important street intersection. Increasing congestion eventually demonstrated the inadequacy of this system and indicated a need for some sort of control that would permit faster traffic movement. During that year a new system was installed, consisting of signals at the busiest intersections in the city, all controlled from a single central station.

The timing station is located in the approximate center of the congested area of the city. From there five main circuits connect with signals at 31 intersections. At each corner there are four signal standards, equipped with "go" and "stop" arms, as shown in the accompanying illustration. Under the normal method of operation traffic proceeds when the "go" arms are displayed at diagonally opposite corners. The "stop" arms at these corners are then folded out of sight. Simultaneously the "stop" arms are displayed at the other two corners, while the "go" arms there are folded up. In case it is necessary to change the method of operation at any particular intersection the four signals may be operated manually from one of them, which is known as the master control unit for that corner.

Below the semaphore arms there are red and green lights. The former operates in conjunction with the "stop" arm and the latter with the "go" arm. During the daytime the lights are switched off. At the top of the signal standard under the hood is located an electric bell which rings for three seconds with every movement of the semaphore arms. The bell, however, is operated from the central station independently of the arms and can be used also to give special signals as in case of an alarm of fire.

When the system is operating automatically the direction of traffic flow is alternated at consecutive intersections, the theory being that this alternation makes possible a continuous movement over several blocks in a single direction, the signals changing to "go" just as the moving vehicles reach the corner. This is thought by the advocates of the system to be a better arrangement than to have the intersections controlled by traffic officers who may not co-ordinate their signals, thus allowing more traffic to flow into some blocks than is allowed to flow out again at the next intersection. It is said to be superior also to a traffic control system whereby all traffic is simultaneously halted over a large area to permit the movement of cross-traffic. The claim has been made that it is possible for an automobile to pass from one end of the congested district

in Los Angeles through to the other end without being once delayed by cross-traffic. Careful observation, however, does not confirm this contention.

One of the difficulties with the present arrangement is that the north and south interval of 45 sec. is too long in comparison to the east and west interval of 35 sec. Observation has shown that there is often from 8 to 20 sec. when the signals are clear for north and south movement and no traffic to move. Meanwhile east and west bound traffic is held up. Traffic officers make little attempt to stop the flow of traffic over the intersections until the change of signals. As a consequence signals are found reading "go" in one direction while the traffic is still moving on an intersecting street.



A Signal Standard of This Type Is Used at Each of the Four Corners of Every Street Intersection in the Congested District of Los Angeles

The railway has found that there is a temptation for motormen to try to beat the traffic signal and start their cars too soon. When the signal is clear there is a natural desire to take advantage of it and the cars sometimes fail to wait until all passengers have boarded. Also, drivers of motor vehicles often operate at excessive speed in their desire to beat the signal at a crossing. It is thought that a majority of the automobile accidents in the congested districts are attributable to this cause.

Purchasing Energy Saves \$15,000 a Year

ARRANGEMENTS have recently been completed by the Hartford & Springfield Street Railway, Warehouse Point, Conn., for the purchase of electrical energy from the Northern Connecticut Light & Power Company, Thompsonville, Conn. The railway's steam power plant at Warehouse Point has been shut down and direct current for car operation is obtained through a 1,000-kw. rotary converter substation.

The railway company has been in the hands of a receiver for some time, so that the agreement made with the approval of the court is for one year only and thereafter from year to year until terminated by either party. The introduction of central station energy into this situation indicates a substantial saving

to the transportation company, the rate for energy being on a sliding scale to compensate for variation in power demands.

Two 500-kw. rotary converters with the necessary transformer equipment have been installed by the railway to supply the trolley service, energy being purchased at 13,200 volts. The converter and transformer installation cost about \$25,000. The railway company generated 2,392,000 kw.-hr. in 1922 at a total cost of \$69,950 (the principal items were fuel, \$46,210, and power station labor, \$14,262). Allowing 15 per cent loss in the conversion would require the purchase of 2,673,410 kw.-hr. At the contract price, including 15 per cent charges on a total investment of \$30,000 on the part of the railway to provide for the supply and \$1,000 a year for maintenance, the same amount of energy purchased from the Northern Connecticut Company would have cost \$54,948, or a saving of approximately \$15,000 per year to the railway on the 1922 consumption basis—50 per cent on the cost of the equipment installed to permit the purchase of energy.

Daily Statement of Earnings and Expenses

Eastern Massachusetts Street Railway Finds It Useful in Making Service Adjustments—Also Keeps Census of Industrial Population

FOR about four years the Eastern Massachusetts Street Railway has followed the practice of requiring each of its fifteen local managers to compile a daily statement of earnings and expenses. The advantages of such a statement over the monthly statement are apparent, especially as the monthly statement usually is not available earlier than the 10th of the month following that for which it is compiled. With the daily statement, tendencies in both earnings and expenses can be very quickly detected, and the plan makes possible very prompt action in controlling service and other expenses.

Possibly closer attention to changes in the demand for transportation is necessary in very highly developed industrial territory, such as that served by the Eastern Massachusetts Street Railway, than in a community with more diversified interests. Slight changes in the cost of raw materials or in the demand for finished products affect directly the number of employees required in the many large cotton mills, woolen mills and shoe factories in the territory of the Eastern Massachusetts Street Railway.

The form upon which this daily statement is compiled is reproduced herewith. The reports from each division are assembled by one of the assistants in the central office. He keeps in close touch with all work being done and with the records as they come in from the divisions and thus can watch the margin between receipts and expenses as well as quickly detect any abnormal or unwarranted tendencies in either gross or net. Any such tendency is investigated and called to the attention of the proper officials. Summaries of the major items are prepared every seven days.

This plan makes available for the management reasonably accurate figures on the second day after the day to which they apply. While some estimates necessarily have to be made, it has been found that the figures are so accurate that the totals at the end of

the month will not vary to any important extent from the corresponding actual figures in the regular monthly report. In practice, a few of the daily expense figures are the daily average of the monthly figure, so that it is necessary to calculate only the variable items.

While this daily statement has proved most useful for the purpose intended, it is not the only means used for determining promptly possible variations in the demand for transportation. Another and very effective way is by keeping an up-to-date "census" of the employees in the principal factories served. The basis for

EASTERN MASSACHUSETTS STREET RAILWAY COMPANY		DISTRICT, DATE		DAY	CURRENT MONTH TO DATE
REVENUES AND INCOME					
Cash Receipts					
Ticket Sales					
Miscellaneous					
Divisional Adjustments					
TOTAL REVENUES AND INCOME					
EXPENSES					
Truck and Roadway Labor					
Ties					
Other Material					
Electric Line Labor					
Material					
Buildings					
Labor					
Material					
Depreciation—Way and Str.					
Equalization—Way and Str.					
TOTAL WAY AND STRUCTURES					
Equipment					
Divisional Labor					
Material					
Shop Orders					
Depreciation					
Divisional Adjustments					
TOTAL EQUIPMENT					
Power					
Labor					
Fuel (South-Quincy Point Power)					
Other Material					
Power Interchange					
Bought from Other Companies	Day	To Date	KWH	KWH	
Sold to Other Companies			KWH	KWH	
Interdivisional Exchange			KWH	KWH	
Depreciation					
(KWH Generated Day To Date) TOTAL POWER					
Cond. Transportation—Wages of Trainmen—Adjusted					
Other Trans. Labor and "p."					
Material					
Snow and Ice					
TOTAL COND. TRANSPORTATION					
Gen. and Miscellaneous—Pay Cent Passenger Revenue Last Month \$					
Injuries and Damages					
TOTAL GEN. AND MISCELLANEOUS					
TOTAL OPERATING EXPENSES					
TAXES					
TOTAL OPER. EXPENSES AND TAXES					
NET EARNINGS (Deficit in Red)					
Amount Required to Meet "Cost of Service"					
SURPLUS (Deficit in Red)					
Adjusted Revenue Car Miles					

Form Used for Daily Statement on Earnings and Expenses, Eastern Massachusetts Street Railway

this census is a count which was taken three or four years ago, showing for each district the distribution of industrial workers and their demands for transportation. Since then, the railway company has arranged with each large employer of labor in the district to appoint some one in his organization to inform the railway promptly of any changes in the factory force which will affect transportation schedules. The interest of the employer lies in the fact that his employees in this way are insured of adequate car service when the working forces are increased.

Railway Operates Passenger Automobiles for Intercity Service

Indiana, Columbus & Eastern Traction Company Uses Seven-Passenger Touring Cars Under Competitive Conditions—Cost of Operation Is Comparatively Low—Rules Insure Careful Operation—Regular Maintenance Reduces Road Failures



Buses and Cars, Both Operated by the Railway, Use the Same Terminal

BUS service in competition with their own interurban lines as well as with other buses has been operated for the past year by the Indiana, Columbus & Eastern Traction Company, Springfield, Ohio, and the Columbus, Newark & Zanesville Electric Railway. Twenty-six Studebaker seven-passenger touring cars are operated on an hourly schedule between Columbus and Dayton and between Columbus and Zanesville. Bus schedules are arranged so that they are staggered with the interurban cars to give the equivalent of half-hour service.

In order to gain the advantages accruing to those who were bona-fide bus operators when the revised Ohio motor bus law went into effect, these railways were forced to put an extended bus system into operation hurriedly. They entered the bus business to control the routes paralleling their interurban lines and also because they believed that there was a real public demand for this type of transportation and that it should be furnished by the existing companies. The entire plan was inaugurated between April 8 and April 12, 1923. Considerable publicity has been given the new operation to assure the traveling public that the bus service will be continued by the electric railway after competition has been eliminated.

In studying the effect of private automobiles on interurban earnings, the management found that more serious inroads were made on local business than on through business. The conclusion was reached that the

passenger automobile had also created a certain demand for motor transportation that really represented new business. It was believed that a certain proportion of intercity riding in private passenger cars could be induced to utilize a properly operated bus system. This would thus represent new traffic that could not be induced to use the interurban railway line. Providing competition was eliminated, such business could be handled profitably by bus. Moreover, it was felt that the use of comparatively light, cheap passenger cars would give low investment and low operating costs and would reduce the losses incurred during the period of competition.

The bus routes parallel practically all the divisions of the electric railways with the exception of sections between Dayton and Union City, Lakeview and Lima and Newark and Zanesville. Twenty-one vehicles are required to operate the hourly schedules, although twenty-six were purchased to provide a sufficient number of extras. They are seven-passenger Studebaker "Big Six" touring models, equipped with winter tops.

At first, to determine the possibilities of the new service, the buses were operated from 4 a.m. to 11 p.m. The fare is on the basis of 3 cents a mile and with a vehicle seating seven paid passengers the maximum possible revenue would be 21 cents per bus-mile. Under the competitive conditions existing, however, only 8 cents per bus-mile was actually obtained.

A schedule speed of about 30 m.p.h. is maintained.

Drivers get 45 cents an hour and are paid for ten hours of operation. A careful check has shown that from seven-tenths to eight-tenths of this time is actual operating time. Hence, platform wages are in the neighborhood of 2 cents per bus-mile. It was soon found that the total operating costs were approximately 9 cents per bus-mile. This is based on a three-year life, or an estimated mileage of 150,000 miles. In the 9 cents, however, only that portion of the railway overhead represented by actual expenses incurred incident to the bus operation is charged against the buses.

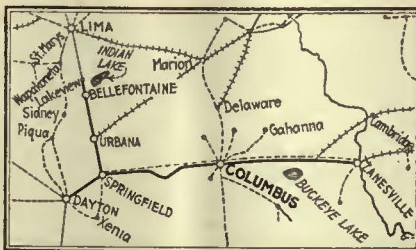
This schedule showed a loss due primarily to the small load factor incident to the long hours of operation. When the service was changed to a so-called daylight schedule, namely, from 7 a.m. to 6 p.m., corresponding with the hours operated by competitive lines, the revenue was increased from 8 cents to 11½ cents per bus-mile, with practically the same operating costs per mile. The change in schedule gave a slightly increased fixed charge per mile, but also resulted in a reduction of 30 per cent in the number of miles operated per day and a consequent reduction in the depreciation rate.

The estimated life of 150,000 miles per vehicle is based on experience with motor cars which have already been in service for more than 100,000 miles. It is estimated that this mileage will allow cars to be scrapped before any serious increase in maintenance cost or service delays is experienced. Rigid inspection and prompt renewal or replacement of defective or questionable parts are practiced and are considered very important in connection with obtaining reliable service for this mileage from each vehicle. Tires, which are the most frequent cause of road failures and delays, are inspected and examined at frequent intervals and removed as soon as any question arises as to their condition.

The maintenance charges, over a six-month period, including vehicles which had made more than 90,000 miles, was 3¼ cents per mile. For the month of May, 1923, with entirely new equipment, the cost was 3.69 cents per mile, whereas during the month of September, after six months of service, the cost was 2.93 cents per mile.

A mechanical organization for the maintenance of the bus equipment has been built up entirely separate from the regular railway maintenance forces, with the exception that the garage foreman reports to the railway master mechanic. A separate building is equipped for the maintenance, storage and servicing of the buses and mechanics trained in automobile maintenance are employed for this work.

The buses are operated by subsidiary organizations known as the Dayton & Columbus Transportation Company and the Columbus & Zanesville Transportation Company. Tickets are sold by agents in the interurban stations in the various



Railway Bus Routes Between Dayton and Zanesville Parallel Company's Tracks

towns through which the buses operate. Seats are reserved in advance when tickets are purchased. The station agent is provided with a diagram which is turned over to the driver at the time of the departure of the bus, showing the seat number, ticket number and destination of each ticket sold for that vehicle. The passenger's ticket also specifies the seat in the bus to which he is entitled. A diagram similar to a Pull-

man diagram is filled out, giving each passenger's destination. It provides for seven seats in addition to the driver. Room for one additional passenger is arranged by fastening the two folding seats in the rear section of the car together at the center and building a short extension on either side. The construction is illustrated in an accompanying illustration.

A bus driver's report envelope contains on its face full information covering the trip, and a separate envelope is used for each trip made. These reports are turned in to the cashier and contain all canceled tickets, cash fare receipts, stubs and the seat diagram for the trip. Cash collected en route is handled in another special envelope provided for this purpose. A bus driver's wheel report is used to inform the garage of all mechanical and tire defects. Drivers are required to give receipts to passengers for all cash fares collected. Careful accounting is made of the receipts on a form giving a complete record of the operation, and each driver is required to sign for the receipts issued to him. Daily reports of ticket sales are made by agents to serve as a further check on cash handled by employees.

Rules for the operation of buses were prepared as soon as this service was put into effect and included practically all provisions that have subsequently been laid down by the Public Utilities Commission of Ohio for the regulation of motor vehicles operating as public carriers. These rules include the following provisions:

(a) Drivers must operate in a careful and prudent manner, with due regard to traffic and use of the way by others, so as not to endanger the life and limb of any person.

(b) Drivers shall be American citizens, twenty-one years of age, of good moral character, must be fully competent to operate the vehicle under their charge, and shall have a certificate of license from the Secretary of State.

(c) No driver shall drink any intoxicating liquor during the time he is on duty, or at any time use intoxicating liquor to excess.

(d) No driver shall smoke any cigar, cigarette, tobacco or other substance while operating a motor bus.

(e) No driver shall carry on any unnecessary conversation with passengers.

(f) Upon approaching any bridge, sharp curve, steep descent or any other dangerous place, or in traversing such bridge, curves, jut way, descent or other dangerous place, the driver or operator of the motor vehicle shall slow down and have the vehicle under complete control.

(g) A driver of a motor vehicle shall bring it to a full stop before crossing the tracks of any steam or electric interurban railroad, such



An Additional Seat Is Made by Bridging the Space Between the Two Regular Seats

stops to be made not more than 75 ft. from the nearest rail of the crossing and at points where the clearest view of the approaching trains, locomotive or cars can be had. After making the stop hereby required, the driver shall carefully look in each direction for approaching trains, locomotives or cars, and if certain that no such trains, locomotives or cars are approaching, he shall then cross such tracks with the transmission of said vehicle in not higher than second gear. The foregoing does not apply to electric railways within public streets in municipalities.

In addition to the promulgation of these rules, the company has equipped all cars with red flags for emergency use in the daytime and fuses for use at night. All cars are equipped with chains, and the drivers are instructed to use them in slippery weather.

Insurance is carried in compliance with the state law of Ohio, which requires on seven-passenger cars the following total liability: \$6,000 for any recovery for any personal injury by any one person, \$12,000 for all persons receiving personal injury by reason of one act of negligence, \$1,000 for damage to property of any person other than the assured. The insurance against damage by collision is carried by the transportation company. The liability insurance has been placed with old line companies on an experimental basis. Under this arrangement all cars are covered by insurance for a minimum rate and it is expected that the final insurance rate will be worked out at the close of the year on the basis of the car-hours in service, taken from bus drivers' time slips, deducting from them such time as dead layover time at terminals. The company and the insurance companies have co-operated with a view to working out an equitable basis for this form of insurance.

Bonus for Increased Revenue

Pay of Employees Goes Up One Cent per Hour with Every Cent of Passenger Revenue per Car-Mile Over Previous Average

A VERY simple profit-sharing plan has been in force on the New York & Queens County Railway since July 1, 1923. It provides that for every cent above 31 cents which the railway earns in passenger revenue per car-mile during any month the wages are increased during the following month one cent an hour over a specified basic wage. Those who participate in this bonus include all transportation employees except the superintendent, all mechanical department employees except the superintendent and shop foremen, all line department employees and all substitution employees except the chief engineer. The trackmen are not included, as the service of individual trackmen on the property is far less continuous than with any of the other classes.

The plan was announced by Gen. L. C. Andrews, receiver for the company, last June, and 31 cents per car-mile was the figure set for the men to exceed, because that had been the average receipts of the system subsequent to the appointment of the receiver. The basic transportation wage, to which the bonus is added, went into effect at the same time as the bonus system, and is somewhat higher than that previously in force. It is on a ten-year schedule, like the wages on the other lines in Greater New York, and is as follows:

For motormen and conductors, first year, 47 cents; second year, 49 cents; third year, 51 cents; fourth year, 52 cents; fifth year to ninth year, 53 cents; tenth year and thereafter, 55 cents. Operators of one-man cars receive 5 cents an hour in addition to this regular rate.

In his announcement General Andrews pointed out that the company wanted more revenue and the men wanted more pay. If they would help the company get the revenue, they could have part of it in the form of higher wages. The passenger revenue per car-mile during the previous year had averaged just under 29 cents, and since the receiver had been appointed it averaged just under 31 cents. This was the smallest car-mile revenue of any street railway company in New York. It was pointed out that if each operator would pick up only one more fare for each car-mile of his run, then the average car-mile revenue would be increased by 5 cents and the employees' pay also by that amount. The announcement promised also that each day the company would post at its carhouse the car-mile earnings of the day before and the average of the month up to that day, so that the men could see what their chances were of having a bonus the following month.

There are only two restrictions to the plan. The first is that a man must work at least 150 hours during the month in which the increased earnings are created to receive the bonus during the following month. The second relates to accidents. Where a liability accident results in a settlement in favor of the claimant and investigation has shown that the accident was the fault of the motorman, he is obliged to forfeit thirty days of his increased pay, effective immediately after the decision of the general manager. The announcement also suggested ways in which the different kinds of employees could help. On this point it said:

HOW TRANSPORTATION MEN CAN HELP TO INCREASE CAR-MILE EARNINGS

By keeping your eyes open and picking up every possible passenger.

By running on time, so passengers learn to count on the cars coming along.

By being courteous to passengers.

By making every passenger want to ride on our lines again.

By encouraging local riding during non-rush hours.

By avoiding accidents that tie up the road.

By taking care that every passenger puts correct fare into the fare box.

HOW SHOP MEN CAN HELP TO INCREASE CAR-MILE EARNINGS

By putting out shop jobs that will stand up on the road.

By putting out cars that are clean and comfortable to ride in.

By working with the trainmen to get cars on the road in time, to avoid dead mileage, and to live up to schedules.

HOW LINE MEN CAN HELP TO INCREASE CAR-MILE EARNINGS

By not blocking the line more than you can help while doing line work.

By getting on the job promptly in case of line trouble.

HOW EVERYBODY CAN HELP TO INCREASE CAR-MILE EARNINGS

By being a booster for the New York & Queens trolley service.

By co-operating with the other men in your department and in other departments in everything that affects the car service.

By working for the interests of our trolley lines in the same way that a man works for his own business.

By making it part of your job to be a salesman of the New York & Queens trolley service.

By keeping on the lookout for anything that will help make service better or cheaper and by telling General Manager Roberts about it.

The results since the plan went into effect on July 1 have been quite satisfactory. During June, 1923, the car-mile receipts were 32.1 cents, so that during July

the wages were up 1.6 cents per hour. During July the increased wage earned was 1.4 cents per hour. The record for the year up to March 10, 1924, with corresponding figures for the previous year, follows:

EARNINGS AND BONUS ON NEW YORK & QUEENS COUNTY RAILWAY				
Earnings per Car-Mile				
	1922, Cents	1923, Cents	Increase, Per Cent	Bonus Payment, Cents per hour
June.....	29.6	32.1	8.5	1.1
July.....	31.6	32.4	2.5	1.4
August.....	29.1	32.5	11.7	1.5
September.....	29.5	32.8	11.2	1.8
October.....	28.2	31.8	12.8	0.8
November.....	27.6	31.6	14.5	0.6
December.....	27.7	32.3	16.6	1.3
January.....	27.2	31.8	16.9	0.8
February.....	27.5	30.9	12.4	...
March.....	30.1 (1 to 10)	32.5	8.0	...
April.....	30.7	.....	.....	.....
May.....	33.7	.....	.....	.....

It is impossible to say what proportion of the increased earnings, as compared with the previous year, is due to the bonus plan, because there are other factors which have tended to increase the passenger revenue. The management believes, however, that the greater interest taken in their work by the men, particularly the trainmen and inspectors, is responsible to a considerable extent for the better showing.

Better Illumination with Less Wattage

BY E. E. DORTING

Lighting Engineer Interborough Rapid Transit Company, New York

BETTER illumination, aimed to speed up passenger movement within the "L" stations, has been provided by the Interborough Rapid Transit Company in several stations of the Manhattan Elevated. The new lighting system gives, without glare, a maximum amount of light at the turnstiles, with a nearly uniform intensity of illumination over the rest of the station. Four 75-watt lamps in dome reflectors mounted on the ceiling replace the old installations of ten 40-watt bare lamps mounted on wall brackets.

Both the lamp renewal cost and the operating cost are less for the new system. The renewal cost of the four 75-watt white Mazda lamps of the new installation at 55 cents each is \$2.20, whereas the ten 40-watt

bare lamps at 30 cents each cost \$3. Four 75-watt lamps total 300 watts, while the ten 40-watt lamps total 400 watts—a saving of 100 watt-hours for each hour the lights are lighted.

While the Interborough has been confronted with the problem of designing and equipping its stations to handle larger and larger crowds, and traffic experts have arranged stairways, turnstiles and locations of doorways for accommodating a maximum number of people with a minimum of delay and confusion, until recently little consideration was given to the possibility of improved lighting as an aid to traffic congestion. Many tests have proved that a higher intensity of properly diffused illumination speeds up production in a factory, increases sales in a store, reduces traffic accidents. Good lighting is equally applicable to enable the hurrying "L" passengers to move along faster. At least the stations are brighter and more cheerful when they are well lighted, which fact alone warrants the change.

The old lighting system consisted of ten 40-watt bare lamps mounted on wall brackets. These were spaced about the station wall and gave considerable glare. On all sides the lamps threw unshaded light directly into the eyes of the people. The walls were brightly lighted, but there was not nearly enough light in the center of the station, and especially at the turnstiles, where the most congestion exists, and consequently a high intensity of light is important.

The new lighting system of four 75-watt white lamps in RLM standard dome reflectors largely eliminates the shadows. From the standpoint of glare the new installation is much better than the old as the units provide a high quality of well-diffused illumination, while their location close to the ceiling "softens" any glare as they are out of the line of vision.

Photometer readings taken at numerous points in the station show the average illumination to be increased 75 per cent, while over the turnstiles it was increased almost 350 per cent. The present average intensity of illumination in the station at the floor level is approximately 4 foot-candles. This greater effectiveness results from the use of a smaller number of large units equipped with efficient reflectors which direct the light where it is needed rather than allowing it to be wasted largely on the side walls.



Old and New Method of "L" Station Lighting
 Ten 40-watt lamps on wall brackets (left) have been replaced with four 75-watt ceiling lamps with reflectors (right), giving 350 per cent better illumination over the turnstiles, without glare.

Signals Reduce Operating Expenses

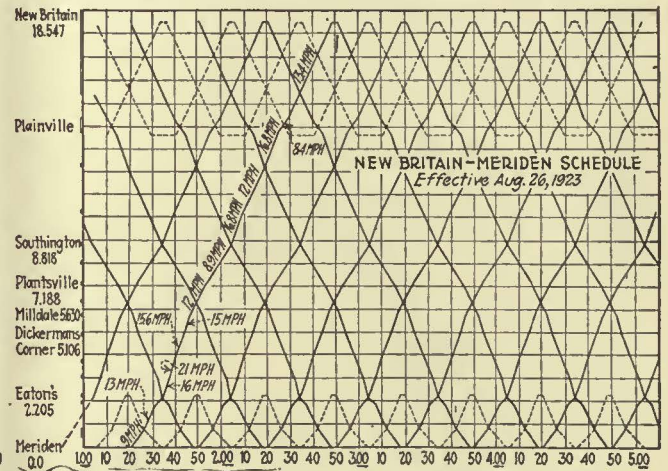
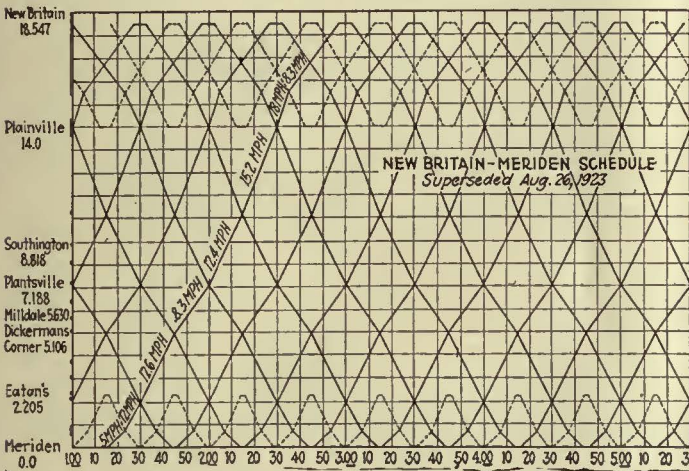
Block Signals Installed by Connecticut Company Pay for Themselves in Six Months by Reducing the Car-Hours Lost on Turnouts

AN INTERESTING example of the way in which block signals reduce the time of cars waiting at turnouts and so save operating expenses is shown by an installation completed last August by the Connecticut Company between Meriden and New Britain. The length of route between the center of Meriden and the center of New Britain is 18.547 miles and, outside of a

\$5,000, including some land which had to be purchased for one of the turnouts.

The cars used are four-motor double-truck cars, equipped with Westinghouse 101 or G.E. 80 motors. The speed given, as shown in the chart, is of course not high, compared with some interurban lines, but it must be remembered that the line passes through several small industrial towns and roads with many automobiles.

Before disturbing the schedule on the line, which had been in operation a great many years, and to which the patrons had become accustomed, the company interviewed a great many people who would be apt to be interested in the change, including the managers of the major industries. The advantages of the plan were



One Car Less Is Required to Operate This Half-Hourly Schedule Since Signals Were Installed. Old Schedule at Left, New Schedule at Right.

short section of double track at each end, is single track with turnouts. This track is laid partly in side location, partly in the center of city streets and partly in improved state highways, and the route passes through Milldale, Plantsville, Southington and Plainville. All are fair-sized industrial towns with narrow streets.

A portion of the afternoon time-table, from 1 p.m. to 5:30 p.m. before the installation of signals, is given in the first engraving. The through time-table was half-hourly, with an intermediate half-hourly local service out of Meriden as far as Eatons and out of New Britain as far as Plainville. This, with the through service, gave a fifteen-minute headway for short distances out from both Meriden and New Britain. There is also an additional fifteen-minute service, not shown in the chart, from New Britain as far as Corbin Avenue during the morning and afternoon on week days. These three local services are with one-man cars.

The through schedule shown had to be somewhat slack to give the cars ample time to make the turnouts at which they were scheduled to pass each other, and, as will be seen, seven cars were required to give this through half-hourly service. With the introduction of signals, it was possible to tighten up the schedule, so a car would make the half trip in one hour and twenty-eight minutes, instead of one hour and forty-three minutes. This allowed the service to be given with six cars instead of seven cars and gave a more dependable and faster service. While there were no more passing points, their location was changed, so that the change required the installation of two more turnouts. Altogether there are five passing points, but as two are on double track, only three turnouts are required. The old turnouts were left in position for emergency use. The cost of the two new turnouts was about

explained and the co-operation of the various industries secured.

The cost of installing the signals was about \$10,000, and even if the \$5,000 spent for the additional turnouts is included as part of the cost of installation, the company estimates that the saving made from running the schedule with one less car pays for the entire improvement in about six months.

All-Electric One-Man Car in Holland

A NOVEL type of one-man car has been put in operation on the street car lines of Amsterdam, Holland. This is designed along similar lines to its American prototype, according to *Elektrotechnische Zeitschrift*, but differs in that it is not equipped with compressed air, being operated electrically throughout. Double doors, for separate entrance and exit, are provided at each end. These are opened and closed by ½-hp. electric motors with worm drive and slip clutch. The doors can be opened manually if necessity arises.

A dead-man handle is used on the controller, which is arranged to disconnect the motors, apply the brakes and light a red lamp at each end of the car if the motorman removes his hand. A foot-operated by-pass permits the temporary use of both hands for purposes of making change, etc. The car is driven by two 30-kw. motors. An electromagnetic rail brake is installed for regular use, while a hand brake can be used in emergency. The registering fare box is illuminated electrically so that the operator can see within it at night. The window in front of the motorman is inclined inwardly so that it prevents confusing reflections from the lights within the car which would hinder the operator in his work at night.

American Association News

Executive Committee

THE executive committee of the American Association met at headquarters in New York on April 11. The members present were President Britton I. Budd, Secretary J. W. Welsh, and Messrs. C. L. Henry, R. P. Stevens, J. H. Hanna, C. E. Morgan, C. D. Emmons, H. B. Flowers, R. I. Todd, Harry Reid, H. A. Johnson, J. K. Punderford, E. M. White, Barron G. Collier, M. B. Lambert for H. D. Shute, Cornell S. Hawley and A. A. Hale.

Mr. Henry reported for the committee on national relations, summarizing the recent work done at Washington. The matter discussed by Mr. Henry was covered in the issues of the *ELECTRIC RAILWAY JOURNAL* for March 29 and April 5. Mr. Welsh presented a report for the committee on subjects and meetings which outlined tentatively the program for the annual convention. The executive committee decided that one day should be devoted entirely to the reports and discussion of the committees on city operation and interurban operation. Otherwise the report of the subjects and meetings committee was approved as presented. It was also tentatively decided to devote one entire day to the inspection of exhibits and to that end there will be no business sessions during one day. Whether this exhibits day will be Tuesday or Wednesday will be decided later.

Mr. Budd spoke briefly of the great desirability of formulating some plan which would tend to make delegates to the convention attend meetings and take an interest in all of the proceedings as far as time permitted, whether of immediate interest in the delegate's own work or not. Suggestions were made that it might be helpful if every employee sent to the convention were required by his executive to report upon attendance and impressions of meetings and exhibits. The executive committee requested the president and secretary to formulate a letter to be sent to member companies to impress upon delegates the importance of attending to business while at the convention.

Mr. Collier reported for the publicity committee, outlining the activities of the past 60 days. E. C. Faber made a financial report on *Aera* for the publication committee, which showed the paper to be improving.

Mr. Stevens reported for the committee on company and associate membership, stating that three railway, one manufacturer and one associate members had been added to the membership. The new members are the Muncie & Portland Traction Company, Portland, Ind.; the Sioux Falls Traction System, Sioux Falls, S. D.; the Eastern Massachusetts Street Railway, Boston; the General Tire & Rubber Company,

Akron, and the Buchanan & Layng Engineering Corporation, New York.

Mr. Morgan reported for the committee on individual members and company and community sections that there had been a net gain of five individual members since Nov. 1 of last year, and that there is at present a membership of close to 200 signed up toward the organization of the Metropolitan Community Section of New York.

A letter from W. H. Sawyer gave a preliminary financial report of the Midyear Dinner at St. Louis. The receipts will be approximately \$7,500 and expenses slightly below that.

A report of the exhibit committee, which appears elsewhere in this issue, was presented by Secretary Welsh in the absence of J. C. McQuiston, chairman. The report stated that satisfactory contracts had been negotiated for holding the convention at Atlantic City,

parts of the country had been very well received and that it was thought this would be most helpful in promoting the spirit of co-operation.

On Referendum 43 of the United States Chamber of Commerce on transportation; the matter was referred to the committee on policy with power to act.

An invitation from the international railway association, which is to meet in Paris on June 16-22, was read, but no action was taken as to official representation.

Mr. Johnson reported that the Engineering Manual, which has been revised and prepared for publication in book form by the Engineering Association, would be ready for distribution within the next 60 days. The plan is to print 2,200 copies, of which 1,200 will be bound and the remainder held for binding later if needed, or for binding in sections if companies desire a supply of the matter pertaining to any particular department. The bound volumes will sell to members for \$5 and to non-members for \$7.50, and a credit of \$1.50 will be allowed upon the return of the old Manual. The idea of this refund is to encourage the use of the new Manual in place of the old one, much of which is obsolete. This plan of distribution was approved.

Some discussion was introduced by Mr. Stevens on inconsistencies in the present membership provisions of the association. After an expression of views by several members, the question was referred to the committee on policy with instructions to report back in time for a revision of the constitution to be made at the annual convention, should this appear to be desirable.

The next meeting of the executive committee will be held on Wednesday, May 7, at 4 p.m. in Cleveland, during the annual meeting of the United States Chamber of Commerce, which opens there on Tuesday.

Exhibits Committee

THE committee on exhibits reported to the executive committee on April 11 that it had completed negotiations with the officials in charge of the convention and exhibit facilities at Atlantic City. Proposals for rental of Young's Million Dollar Pier had been submitted by the Associated Realities Corporation and, after considerable negotiation of all terms and conditions, had been made acceptable to the committee, and the contract was recommended for signature by the association.

The committee had also received proposals from the other contractors at Atlantic City including those for furniture, floral decorations, drayage, etc. These have all been approved.

The committee carefully considered the probable sale of space for this year

Annual Convention and Exhibits

A. E. R. A.
Atlantic City, N. J.

October 6, 7, 8, 9, 10

and recommended that a rate of 65 cents per square foot be charged for exhibit space. This was approved.

President Budd suggested the appointment of a committee of bankers, with the idea that they would take an active interest in electric railway financial matters and advise the association on these subjects. The association has special advisory committees on nearly every other phase of the industry but none on finance. It was thought that a committee of bankers would not only be of vital assistance to the association but would bring these men more actively into the association work. Furthermore, their knowledge of the association's activities would tend to bring a feeling of confidence with respect to electric railways into the financial circles. A motion was made and carried authorizing the president to appoint a committee to select and secure five bankers to serve on such a committee, preferably all located in New York so that they could readily get together.

F. C. J. Dell read a report for E. F. Wickwire, chairman of the committee on co-operation of manufacturers. In this it was pointed out that 41 manufacturers had been added to the list of those who were actively interested in co-operating with the association. The report stated that the personal visits of Mr. Dell upon manufacturers in various

as well as the expenses to be incurred and formulated the following budget which was approved by the executive committee:

Expenditures	
Exhibit expense	\$33,015
General convention expenses.....	9,250
Entertainment expense	5,000
Total expenditures	\$47,265
Estimated Receipts	
Sale of exhibit space—60,000 sq.ft. at 65 cents per square foot.....	\$42,250
Contribution from Hotel Men's Association	3,500
Total estimated receipts.....	\$45,750
	\$47,265
	45,750
	\$ 1,515—Total Deficit

The committee considered this a very conservative estimate, and believed there would probably result a profit rather than a deficit. The rate of 65 cents a square foot for exhibit space, the same as last year, was recommended. This was approved by the executive committee.

This report and the action of the executive committee assure the convention being held in Atlantic City during the week of Oct. 6.

Engineering Executive

A MEETING of the executive committee of the Engineering Association was held on April 9 at association headquarters, New York. Those present were President H. A. Johnson, chairman; R. C. Cram, Daniel Durie, C. R. Harte, M. B. Rosevear, C. H. Clark, R. H. Dalgleish, G. C. Hecker and J. W. Welsh.

Mr. Harte reported on the progress of projects being handled with the American Engineering Standards Committee, and Mr. Dalgleish reported on the progress of work in which the Bureau of Standards is co-operating.

Considerable time was given to discussion of the publication of the new Engineering Manual. This is now in the hands of the printers, and it is anticipated that distribution can be begun within a month. The book will contain about 1,000 pages. It was agreed that it should be bound in cloth, uniform with the annual proceedings, and that it be sold to members and others at a price sufficient to cover the cost of publication. It was considered desirable that, in order to retire the existing Manuals, a rebate be allowed on the price of the new book in case an old one is returned.

In addition to the bound volumes it was voted to prepare separate pamphlets in paper covers, divided according to the eight general sections in which the new Manual will be printed, to be sold in response to requests for individual specifications.

The committee adopted a resolution expressing the appreciation of the association to the manual committee, Messrs. Cram, Harte, Durie and Hecker, for the thoroughness with which it has done the work of revision and publication of the new manual.

President Johnson reported that the approval of the American executive committee had been given to the request of the heavy traction committee to have Prof. R. G. Warner prepare a bibliography of heavy electric traction. It is

proposed to mimeograph this material and supply it to members and others. The price will be determined later.

Mr. Dalgleish reported that he had several conferences with the Bureau of Simplified Practice of the Department of Commerce relative to the simplification of car parts resulting from an article in ELECTRIC RAILWAY JOURNAL for Sept. 29, 1923. It was agreed that the matter should be referred to the committee on unification of car design.

A sub-committee of the Engineering Association reported on relations with the A. E. S. C. It was felt that a more effective means for handling these activities is needed, as the existence of the A. E. S. C. undoubtedly will have a marked effect on the committee work of the association. Recommendations were made with regard to the procedure so as to safeguard the interests of the electric railway industry. The report was approved for presentation to the A. E. S. C.

Reports were made on a number of projects for standardization, which it was proposed to submit to the A. E. S. C. jointly with the American Society for Testing Materials. These included a specification for hard-drawn copper trolley wire, five specifications for sundry track materials, and one for open-hearth girder rails.

Several other activities were also discussed in which the association is co-operating with other bodies.

Two plans were presented for the program of the Atlantic City convention, one for a four-day schedule and the other for three days. A tentative program was approved subject to revision by the president and the secretary. Approval was given to hold a session of the purchasing agents and storekeepers, similar to that of last year.

An effort will be made to have an exhibit in the association booth showing the A. E. R. E. A. standards.

A recommendation was approved that the committee on subjects be appointed at the beginning of the association year in order to give more time for the consideration of subjects.

City and Interurban Directing Committee

A NEW committee has been formed to direct the activities of the committees on city operation and interurban operation. It consists of the chairman and one regional vice-chairman of each committee, together with the secretary and a representative of the president. A meeting of this new directing committee was held at New York on April 10. Those present were Chairman H. B. Flowers and Regional Vice-Chairman R. F. Carbutt of the city committee, Chairman Harry Reid and Regional Vice-Chairman H. L. Mitchell of the interurban committee, Secretary G. C. Hecker and E. J. Blair.

It was planned to request the subjects and meetings committee to arrange for the presentation at the convention of a brief report by each regional vice-chairman on his activities. For the preparation of the final report the form of operating handbook originated by Mr. Carbutt was approved as a guide for the collection of informa-

tion. Arrangements will be made to send copies of the handbook to all regional vice-chairmen for use in their visits to properties.

Membership

THE committee on company and associate membership met in New York on April 10. Members present were Chairman R. P. Stevens, C. E. Morgan, H. B. Flowers, Edward Dana, H. B. Potter, A. Flor, K. A. Simmon, R. F. Carbutt, Charles W. Kellogg, E. P. Waller, Harry L. Brown, F. C. J. Dell and Secretary J. W. Welsh.

Mr. Stevens reported the results of his extended correspondence with non-member companies, and each member of the committee was assigned the non-members in his vicinity so that he might follow up the correspondence of the chairman by personal call.

Rapid Transit

THE committee on rapid transit met in New York on April 10 with Chairman W. S. Menden and the following members of the committee present: Edward Dana, B. J. Fallon, James Walker, W. S. Twining, L. H. Palmer, W. H. Maltbie, R. F. Kelker and Secretary J. W. Welsh.

The committee discussed at considerable length the work which might profitably be undertaken by this committee and tried to arrive at the scope of work which it could expect to complete this year. It seemed to be the sense of the meeting that the work should be confined to that of gathering facts as to the circumstances surrounding the construction, financing, operation and regulation of the existing rapid transit systems.

Coffin Prize

A MEETING of the Charles A. Coffin Prize Committee of the A. E. R. A. was held in New York on April 11. Some suggestions had been made that it might be desirable to have, in addition to the main prize, recognition for other companies in the form of an "honorable mention" or "award of merit" for the four or five leading contenders for the prize. Some doubt was expressed by the members of the committee as to the wisdom of this proposal and a letter from J. G. Barry, vice-president General Electric Company, stated that the proposal had been discussed by the officers of his company and they had unanimously agreed that they believed only the single prize should be awarded. His letter suggested, however, that the practice followed by the committee last year of sending letters to the various contestants, pointing out the principal things in which they excelled, should be continued.

A title for the book which is being prepared by H. H. Norris from the proceedings last year was approved, namely, "Electric Railway Practices in 1923."

Those present at the meeting were James H. McGraw, W. W. Trench, E. J. Blair for Mr. Budd, C. D. Emmons and Secretary Welsh.

Maintenance of Equipment

Making the Welding Set Portable

WHILE a welding room offers facilities that are not available in cases where the welding set is taken to the job, still there are cases frequently occurring where it is inconvenient to take the work to a fixed welding room. Sometimes, by taking the welding set to the job, much work can be saved in dismantling parts which would otherwise be necessary if a portable welding set were not available.

To meet such conditions, the Philadelphia & Western Railway, Norristown, Pa., has constructed a truck for its shop welding set. The various switches and resistance for control of the welding equipment are mounted permanently on top of this truck, as shown in the accompanying illustration. The set can thus be used either in the welding room or at any other point where welding current is available.

The truck consists of a wooden platform with four wheels, the two forward ones being arranged to swivel and thus make short turns readily. In order to make the top of the platform level, the rear end is

supported by two straps, which rest on top of the rear axle. A center bearing with support is provided for the front axle, so that this can turn. A rod on the forward side of the front axle provides a means for attaching a handle. This handle is made with hook ends, so that it can be readily attached. When not in use it is placed inside underneath the platform of the truck, so that there is no danger of workmen falling over it, as might occur if it were left projecting out from the truck.

The wheels of the truck have a diameter of 14 in. They were con-

structed in the shop by bending a band of iron to a circular shape and welding six spokes and a hub in position. The hub is made of a piece of armature shaft. Its diameter is 3 in. and its length 4 in. The axles

Weather Is Primary Cause of Signal Failures

BY H. J. CHARTERS

Portland Railway, Light & Power Company

THE annual report of block signal operation on the lines of the Portland Railway, Light & Power Company, Portland, Ore., for the

ANALYSIS OF SIGNAL FAILURES, PORTLAND RAILWAY, LIGHT & POWER COMPANY

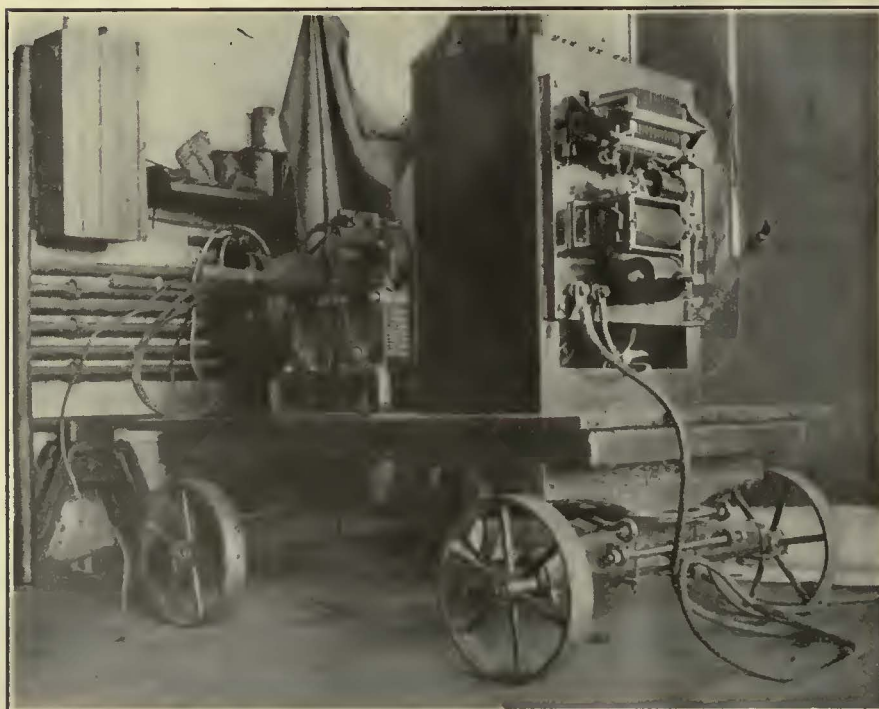
	1921		1922		1923	
	Number	Per Cent	Number	Per Cent	Number	Per Cent
Line wires	5	4	5	7	6	6
Switch and pole wiring	2	2	3	4	12	11
Blown fuses	7	6	3	4	15	14
Directional relay	29	25	22	30	34	31
Signal trouble	6	5	1	1	3	3
Contactors	44	38	26	35	24	22
No. 5 switch	7	6	2	3	8	7
Miscellaneous	6	5	1	1	0	0
No trouble found	11	9	11	15	6	6
Totals	117	100	74	100	108	100

year 1923 shows that adverse weather conditions are the most frequent cause of signal failures. During the summer and fall months the failures are comparatively few, although on account of extra trains the daily signal movements are more numerous than at other times. In June, because of severe electrical storms, there were more failures than in any other month.

Directional relays and contactor difficulties were the most frequent causes of interruption notwithstanding

SIGNAL FAILURES BY MONTHS AND YEARS

	1921	1922	1923
January .....	..	6	22
February .....	..	5	10
March	10	3	13
April	13	8	8
May	17	4	8
June	9	15	16
July	16	8	6
August	12	1	8
September	8	1	4
October	6	8	2
November	16	6	6
December	10	9	5
Totals	117	74	108



Welding Equipment Mounted on Truck for Portability

ing the fact that the original No. 5 contactors had been replaced by more rugged home-made devices at all points where high speed is maintained. For the last three years the number of contactor failures has shown a steady decrease. Fuses and

switch and pole wiring were also important causes of interruption. Cases where no trouble was found were numerous and constitute a considerable part of the reported failures, but it is felt by the railway that it is better to report a signal out of order and inspect it than to "take a chance."

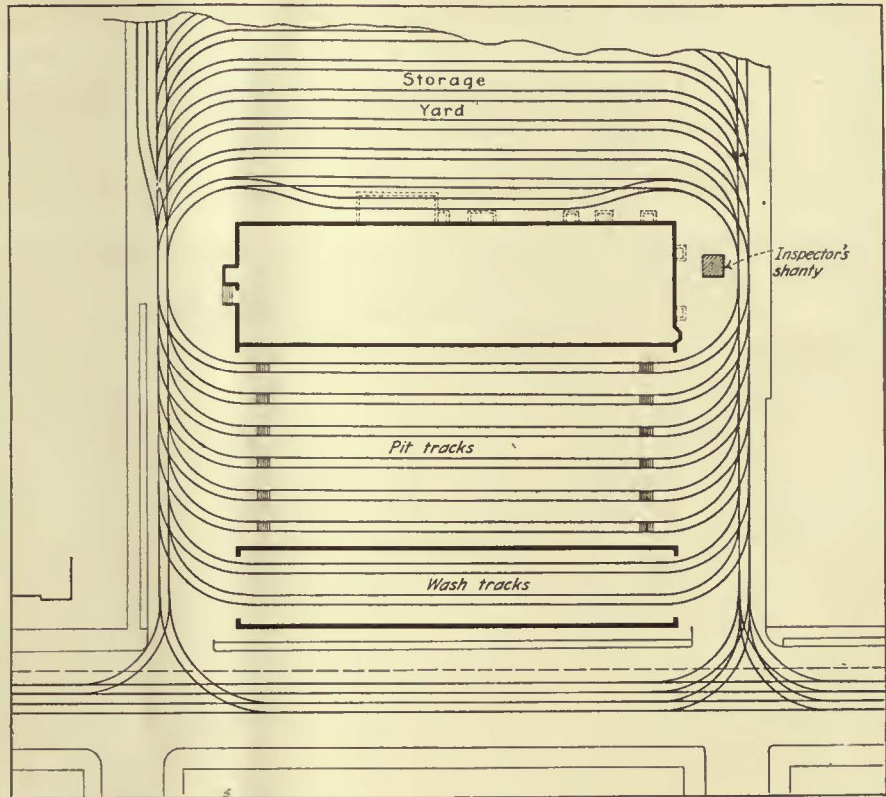
The total number of signal movements during the year was 991,082, the same as during the preceding year. The number of failures was slightly greater on account of bad weather conditions. The durability of the type G1 United States signals, however, has been notable. After being in continuous service for 10 years, they required in most cases nothing but cleaning and adjusting to place them in perfect order.

Detachable Letterboard Simplifies Spray Painting

THE Boston & Worcester Street Railway has adopted the spray painting method for use on the exterior of its cars. The process is simplified as much as possible by the elimination of striping, lettering, etc. A single shade of brown is used for the entire side. Repainting of cars is done more quickly and cheaply on account of the practice of having a detachable letterboard. This is a long wooden strip about three-quarters the length of the car body bearing the legend "Boston & Worcester Trolley Air Line." When a car is being repainted this letterboard is removed. It can be brightened up by washing and varnish, and the expense of relettering the whole sign can thus be saved.

A Track Layout that Facilitates Inspection

THE track layout of the North Main Street carhouse and the adjacent yard of the Springfield Street Railway, Springfield, Mass., has been so designed that all entering cars pass an inspector's shanty. The motorman is required to stop at the shanty and find out from the inspector on duty there where his car is to be placed. The storage yard for cars consists of thirty-one loop tracks, each having a capacity of five cars. The entrance from the street and a portion of the storage tracks are shown in the accompanying diagram. The inspector on duty in the shanty makes a note of the location to which he has assigned the car as it enters the yard. By referring to



All Entering Cars Must Pass the Inspector's Shanty and Are Assigned by Him to Specific Tracks

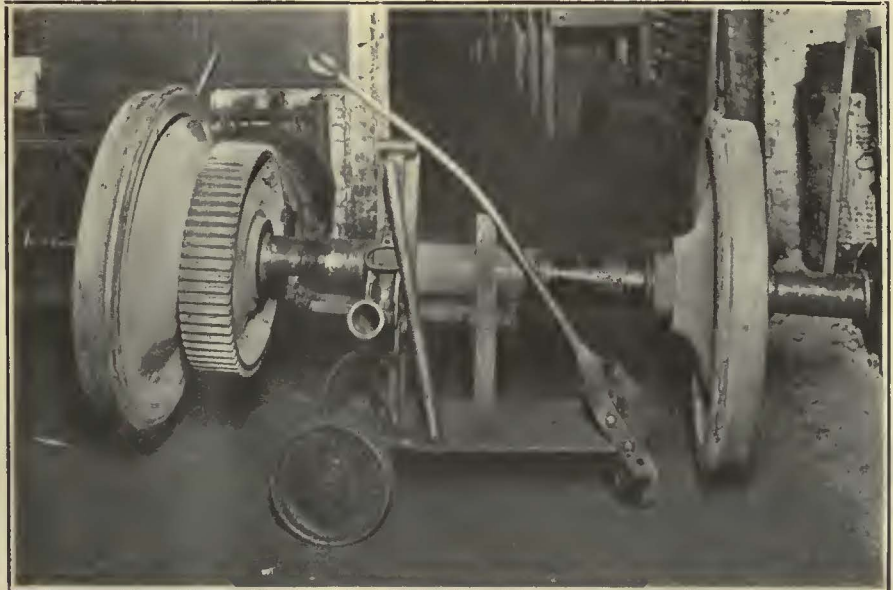
this list, he is able to tell at any moment exactly where any particular car has been ordered placed.

A washroom in the house has two tracks and will accommodate ten cars. Alongside of this is a pitroom with six tracks accommodating thirty cars. About twice as many cars are washed and inspected each night as can be placed simultaneously in the washroom and pitroom. The procedure is for the inspector at the shanty to assign the first batch of cars to the washroom and pitroom.

The motormen pulling in during the evening leave their cars there. After work has been completed on these cars they are run out into the yard and a second batch brought in.

Handy Truck for Moving Wheels

A VERY convenient apparatus for moving a pair of wheels mounted on an axle from place to place in the shop has been devised by the welding foreman of the



Simple Cart for Moving Wheels at Worcester

Worcester Consolidated Street Railway, Worcester, Mass. This is a little truck with two 11-in. steel wheels at one end and a revolving castor at the top. On the floor of the truck has been fastened a Barrett jack equipped with a special

support to fit a street car axle. This little cart is placed directly under the axle to be moved, and by manipulating the jack the axle is raised sufficiently for the wheels to clear the floor. The cart can then easily be moved to any part of the shop.

New Equipment Available

New Highway Crossing Signal

ON ITS line to Erdenheim, a suburb beyond Chestnut Hill, the Philadelphia Rapid Transit Company recently installed a new type of highway crossing signal made by the Nachod Signal Company, Louisville, Ky. This gives indications by a bell and flashing lights. At this location the double-track trolley line crosses the Bethlehem Pike, a main automobile highway out of Philadelphia on which traffic is quite heavy. The crossing is at right angles to the track at the bottom of a long grade on the highway.

The signal is set on a concrete foundation, with a relay box mounted on a pipe standard, at the top of which is a large bell. Brackets attached to the standard hold two parabolic reflector units each fitted with a red cover glass and a 23-watt lamp. A large portion of the light is projected into an approximately

parallel beam, thus giving a brilliant indication by day as well as by night. The projectors are pivoted on gimbals, so that the beams may be accurately directed along the highway in both directions.

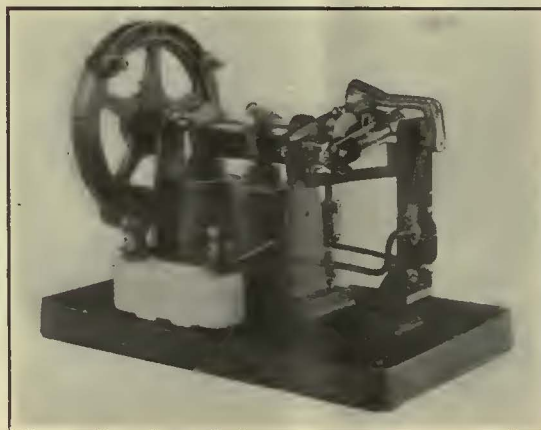
Control of the signal is through overhead trolley contactors of the wiping type, four of which are required for this double-track installation. As the car movements are comparatively slow at this point, the starting contactors are located only a short distance from the highway in each direction.

The light is flashed by a new form of oscillator-type flasher relay shown in an accompanying illustration. The lamp circuit is broken by the tilting of a sealed tube containing mercury, to break the connection between terminals within the tube. On a test of this flasher relay twenty 23-watt lamps on a 600-volt circuit were flashed, the circuit being broken more than 10,000,000 times without any noticeable deterioration of the contacts. The relay base measures $9\frac{1}{2}$ in. x $5\frac{1}{2}$ in.; it is $7\frac{1}{2}$ in. high, and weighs 10 lb. It is said to be noiseless, smooth in operation, and to require little maintenance except lubrication once a month. The flashes are at the rate of sixty per minute in this installation, although the frequency is adjustable.



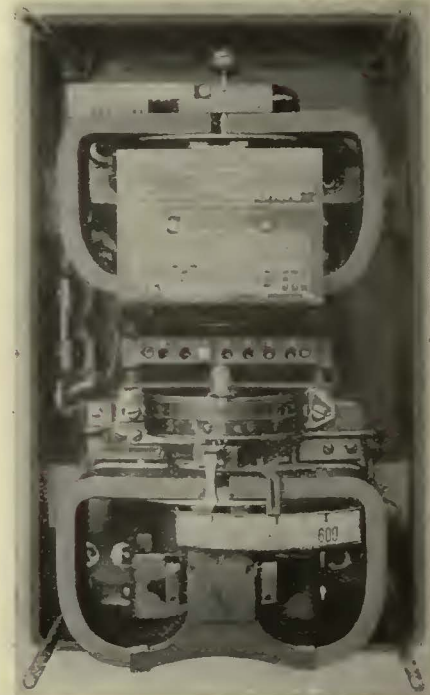
New Signal Recently Installed Where the P. R. T. Crosses the Bethlehem Pike

Below, the Contact in This Relay Is Made and Broken by the Movement of Mercury in the Tube



Relay with Self-Contained Ammeter

A LINE of over-current and directional relays equipped with a current-indicating element is a new product of the Westinghouse Electric & Manufacturing Company. These relays, known as COA and CRA, differ from the company's standard CO and CR over-current and directional relays in that they have self-contained ammeters which give a continuous indication of the current



This Type CRA Directional Relay Incorporates a Current Indicator

flowing in the circuit to which the relay is connected. They are designed for use where the relays are mounted on the front of a switchboard and where there is insufficient room to provide separate ammeters.

In addition to operating as protective relays, these relays indicate the current flowing through the relay circuit, which not only shows the current in the feeder, but also proves that the relay is receiving current and is in condition to operate if a short circuit should occur.

The indicating element is mounted on a separate shaft and has its own jewel bearing and control spring, but is actuated by the same flux which operates the contacts of the relay. This prevents the indicating element from operating when there is any trouble either inside or outside the relay that would prevent the main electro-magnet from being energized.

The News of the Industry

Compromise Transit Bill Passed

New York City Authorized to Engage in Municipal Operation Under Self-Supporting Fares—Present Transit Commission Continued in Office with Supervising Powers

The Legislature of New York has passed the compromise transit bill for the city of New York and the constitutional amendment authorizing the issuance of bonds to the amount of \$300,000,000 for grade crossing elimination, which must be passed by another legislature and receive approval by the people. The Assembly stopped the passage of the Ryan bill, which would have restored 5-cent fares in Troy, and killed the constitutional amendment which would have permitted the city of New York to borrow \$275,000,000 for transit construction, which amount would be exempted from the debt limit of the city in the same manner as water bonds are now exempted. All of the administration program for municipal ownership and regulation of public utilities failed to pass in the Assembly.

GENERAL SESSION DISAPPOINTING

Final decision on many of these things remained an uncertainty, however, up to the last hour. With the desk force of the Senate and Assembly swamped by hundreds of bills amended and passed in its closing hours the legislature adjourned as of April 10. It is said that never before in legislative history in the State has an adjournment been had in such confusion. The clerk had been on practically continuous duty for seventy-two hours. It will be days before the fate of many measures is definitely known.

The compromise bill affecting transportation in New York City was reached as a result of the conference between the Senate and Assembly committees. Substantially the terms of the bill are as follows:

1. All construction and equipment of all new rapid transit railroads, including the determination of new routes, passes to the city.
2. All uncompleted construction under the dual subway contracts is to be under the jurisdiction of the city.
3. The city is authorized to engage in municipal operation or to lease for operation all new rapid transit lines.
4. If the city engages in municipal operation the fare for an initial period of three years shall be 5 cents, but after such time such operation must be self-sustaining, and the revenues sufficient to pay operating expenses, maintenance, interest, amortization and to provide a reserve for depreciation.
5. The powers of the city are to be exercised through a Board of Transportation of three members to be appointed by the Mayor, originally for two, four and six years and thereafter for six years. No salaries are provided, the Board of Estimate and Apportionment being authorized to determine the amount thereof.
6. The present transit commission is retained in office, with power of supervision and regulation of existing rapid transit lines, and the administration of the dual subway contracts, except construction of uncompleted parts and additions and extensions.

The additional power conferred on the Transit Commission by the legislation of 1921 authorizing the commission to adopt a plan of readjustment of existing lines is not disturbed.

All employees of the Transit Commission engaged in construction work will be transferred to the Board of Transportation.

Aside from the transit legislation the New York State legislature closed with less accomplished than in many years. Its chief performance was the passage of a 25 per cent income tax reduction good for 1924 only, the presentation of a home rule measure for cities, much of the interpretation of which will be for the courts to decide, and a constitutional amendment providing for the issuance of grade crossing elimination bonds.

The water power measure was aided by Republication votes, among them Senator Davenport, who declared in voting for the Rabenold bill that the people had spoken at the last election on the defeat of the Ferris amendment to the constitution and that they wanted the ownership of water power to vest forever in the people of the State.

In the Assembly a bill was introduced by Mr. Davison of Nassau county adding a new section, 261-b, to the General Corporation Law, by providing that preference in payment of judgments recovered in actions for torts against public service corporations shall be given in liquidation of affairs of the corporation.

The proposal of the Governor for a commission to devise ways and means to relieve public service corporations of unequal taxation met defeat in the Assembly, the speaker holding that the Davenport committee has already covered most of the ground that such a commission might explore.

Use of Canal Bed Urged for Newark Transit Line

Construction of a rapid transit line by either the city or the Public Service Railway, Newark, N. J., along the bed of the Morris Canal between the Pennsylvania Railroad at River Street and Bloomfield Avenue was suggested on April 7 by Thomas N. McCarter, president of the Public Service Corporation. Mr. McCarter stated the case of his company at a conference of the City Commission with representatives of the railroads and the Public Service Railway to determine what should be done with the canal property. The cost of adapting and equipping the property for rapid transit purposes is estimated

at \$2,500,000. Mr. McCarter said that plans for a rapid transit line such as the company proposed would be ready in about a week and would be submitted to the city.

Five suggestions were made in the Public Service statement on the plans for the use of the canal property. The opening paragraph stated that it was on the "assumption that there is to be within a reasonable time a co-ordinate railway and bus service under one management, furnishing local transportation so that railway financing can be accomplished," that the Public Service made the suggestions.

Scranton Strike Settled

After a strike of four and a half days, the cars on the lines of the Scranton Railway, Scranton, Pa., began operating on April 5, following an agreement between the employees and the management whereby the men accepted the rush-hour run with modifications and consented to the matter of wages going to arbitration. Trainmen are demanding an increase of 17 cents an hour.

As was reported in the ELECTRIC RAILWAY JOURNAL of April 5, the management and the employees could not come to an understanding on the demands made by the Amalgamated for a new contract. The management presented a new agreement requesting that the men operate rush-hour tripper service morning and afternoon, with time to be worked on these runs eight hours and the spread to be five hours. After a number of conferences the division agreed to waive all demands in its proposed agreement except wages and rush-hour runs, nor would they arbitrate them.

The men said they would arbitrate the wages, but would not arbitrate the rush-hour runs. Consequently, there was a deadlock until late on April 4, when the men yielded from their stand and agreed to accept the rush-hour runs with the modification of straight time for the morning service and time and one-half for the afternoon service. This the management agreed to since the men waived all other demands and agreed to submit the wage question to arbitration.

The proposal for rush-hour tripper service makes the following provisions:

1. Rush-hour tripper runs operated in the morning shall be paid at the regular rate of wages, for the first four hours or any part thereof.
2. After eight hours continuous time, after schedule time of leaving carhouse the rate of wages shall be paid at the rate of time and one-half per hour.
3. No tripper runs shall exceed thirteen hours from time of leaving carhouse in the morning.
4. All motormen and conductors assigned to regular tripper runs shall be guaranteed eight hours pay at the rates specified in clause No. 2 of this proposal.

Indiana Union Traction Takes Over Bus Operation

The Union Traction Company, Anderson, Ind., has completed negotiations with the several bus owners of Muncie for the company to take over and operate all lines that have been running more or less regularly since granting the recent court injunction.

By the terms of the sale entered into by the traction company and the bus men, the company buys the rolling stock from the several owners, including not only the half dozen or more large buses that have been running over well-established routes to the different parts of the city, but also becomes owner of touring cars run on irregular schedule during the winter.

While it is extremely probable that a few of the established routes will be changed, it is understood that all of the buses will be continued in use. The plan is to place more street cars on certain runs where street car traffic has always been heaviest. In other places the buses will be used in auxiliary service.

Rochester & Syracuse Injunction Against Buses

The Rochester & Syracuse Railroad has been granted an injunction by Supreme Court Justice Cheney restraining temporarily the operations of the United Arrow Lines, Inc., operators of a motor bus route between Syracuse and Rochester. The temporary injunction will be in effect pending action for a permanent injunction.

The application for the order was based on the claims that the bus line had cut into the profits of the railway and had operated without authority from the Public Service Commission and the municipalities through which it passed. Fred H. Hout, John Griswold and Norman Waterhouse are named in the order as partners in the bus line.

The Arrow line began operations about March 27 and made two trips daily from Rochester to Syracuse. It operated a 25-passenger Pierce Arrow bus. The fare was \$3.90 one way.

Suburbs of Vancouver to Have Rapid Transit

A new entrance into Vancouver, B. C., is planned by the British Columbia Electric Railway for its interurban lines, which will bring both freight and passenger trains into the heart of Vancouver without the use of city streets. It is estimated that it will cost \$1,000,000. At the present time, Central Park, Burnaby Lake and Fraser Valley trains operate over 3½ miles of city streets on which there is a frequent service of city cars. At the point where the private right-of-way ends it is proposed to drop into a short tunnel, then running by means of depressed tracks, using a creek bed to a reclaimed area in the heart of Vancouver known as False Creek. By way of a disused Great Northern Railway right-of-way and bridge, trains will be brought into

the back of the company's terminal station. This will cut off at least ten minutes from the running time between Vancouver and New Westminster and virtually bring rapid transit service to the suburban population between the two cities.

Investigation Completed

Wisconsin Commission Recommends Double Tracking Most of System and Purchase of New Cars

The Wisconsin Railroad Commission, which has been conducting an investigation of the service of the Madison Railways, has recommended double tracking for virtually all parts of the system as soon as possible and the purchase of seven or eight new cars before next December. The investigation and report were made by C. M. Larson, chief engineer, on order of the state commission following many complaints received from the public during the severe cold weather of last winter.

The report suggests that the people who complain so much in general terms study the service rendered in other cities which compare in size with Madison and they will find difficulty in referring to a place where the service compares favorably with Madison.

Mr. Larson found that cars were overloaded on most of the lines during the morning, afternoon and early evening rush periods, "causing inconvenience and discomfort to the passengers and resulting in delays that slow up cars and distort schedules."

The investigation showed that the company owned 12 miles and 142 ft. of first main track and only four miles and 1,858 ft. of second track. The report recommended that certain parts of the system be double tracked as soon as possible.

In making their investigation, inspectors made counts of the passengers on all cars on all lines at the points of heaviest loading and also made observations of the intervals between cars. Intervals of fifteen to twenty minutes were numerous. Insufficient double track and cars were largely the cause of this condition.

According to the report there was overloading of cars during the morning rush on the Fair Oaks line and during the afternoon rush on the Fair Oaks, South Madison and North Street lines. It was recommended that improvements be made in the block signal system.

The report stated that it was true that during the rush periods larger cars would be much more satisfactory than those now in service. Many more passengers could be handled without the necessity of placing additional cars in service, but it said that there was another feature that could not be overlooked. During the larger part of the day the small cars have sufficient capacity. Larger cars would give no better service and the cost of operating the larger cars would be very much greater than the cost of operating the smaller ones.

Officials of the company expressed their desire to co-operate fully with the commission in carrying out recommendations contained in the report.

Franchise Extensions Arranged in Birmingham

Thirty-year extensions of franchises of the Birmingham Railway, Light & Power Company, Birmingham, Ala., covering 140 blocks of track were granted by the City Commission on March 25 in consideration of the payment of \$35,000.

The steam heating franchise of the company was also extended by the commission for thirty years. The company agrees to furnish free heat to the City Hall and city jail as long as they are maintained in the present location and the present contract remains in effect.

Approximately 90 per cent of the company's franchises were originally granted in perpetuity. The present extensions cover only about 10 per cent of the total.

Another ordinance was adopted providing that the discontinuance of service on any portion of a line with the consent of the city shall not work a forfeiture of the franchise if the company upon ten days' written notice from the city restores service. In the event tracks have been taken up and poles removed, the ordinance provides a reasonable notice in writing with allowance of time to replace the tracks and resume service. This same ordinance provides that in the event the city desires to pave any street upon which the company has a franchise for a double-track line, but has only laid one track, the company must make an election and either forfeit the franchise for one track, or else put down its second track, or as another alternative must pay for the same proportion of the paving it would have paid for had its second track been laid.

Maumee Valley Railway Ousted from City

The City Council of Maumee, Ohio, a municipality 8 miles south of Toledo, has passed an ordinance ousting the Maumee Valley Railway from operation within the city limits. The ouster was the result of a controversy between the city and the railway over the improvement of the main highway from Toledo to Maumee. The railway follows the highway.

Officials of Lucas County recently decided to widen the road to 27 ft. The Council of Maumee at the same time passed a resolution authorizing the widening of the road within the jurisdictional limits of the city to 32 ft. This would have necessitated taking over part of the right-of-way of the railway.

The city demanded that the railway move its tracks from the west side to the middle of the road. The company protested against the demand contending that the change would involve the expenditure of \$85,000, which it was not in a position to undertake at this time.

L. G. Van Ness, president of the railway, said that the proposed improvement would be enjoined or the ruling of the Council appealed to the Ohio State Public Utilities Commission.

Thirty New Jersey Jitneys Ordered to Suspend

In decisions handed down on April 8 the Board of Public Utility Commissioners of New Jersey disposes of eighty-eight complaints filed by the Public Service Railway against alleged unlawful operation of jitneys in various cities in North Jersey. Thirty jitney drivers were adjudged guilty of unlawful operation and ordered to discontinue service by April 30. In the meantime applications may be submitted to the board for approval of municipal consents to operate buses. Complaints in twenty-six other cases were substantiated, but no order of discontinuance was issued, because applications for state approval have been filed since submission of the Public Service charges. The board will dispose of the question of the necessity for operation of these buses in a decision to be handed down later. Because the Public Service Railway failed to submit evidence in thirty-two other cases the complaints were dismissed.

Automobile Body Comments on Akron

The National Automobile Chamber of Commerce says that a great deal of misinformation grew out of the twenty-seven days' war at Akron. That body says that in the excitement it was utterly lost to view that the motor bus industry and the electric railway industry both join in the belief that the function of the motor bus and the street car—two distinct agencies of transportation—is to furnish co-operative transportation by means of co-ordination. The chamber says that the bus and the street car have not been, and are not, at war to exterminate each other. Complete motorization of a city's transportation service has not been the desire or the hope of the motor vehicle industry.

The statement by the chamber was prepared at the suggestion of a number of papers that wanted the story. In its statement the chamber further said:

What has happened in Akron cannot be considered proof of any of the following hypotheses: That the motor bus as an agency of transportation fails to measure up to the street car; that the public prefers street cars because of certain positive advantages; that complete motorization of transportation is impracticable in a city the size of Akron.

None of these points was supported by proof because of the confusion attending the sudden suspension of street car service and the over-night efforts of the city administration to induce free lance bus operators from various parts of the country to install bus service. The experiment was tried under the most unfavorable conditions as far as buses were concerned—whether one views the situation as a supporter of complete motorization or with the well-considered viewpoint of the motor vehicle industry which believes in co-ordination of buses with street cars to improve public service.

The chief difficulty was that the city administration could not guarantee to a bus operator any franchise or stated period of operation. Not even a license could be given or even guaranteed; insurance could not be obtained, and inasmuch as the time was too short to get permits from the Public Utilities Commission there was not only no regulation of these common carriers, but contentions arose that laws were being broken.

As a result, responsible bus operating companies having adequate and up-to-date equipment could not be induced to invade

the Akron field. Only those willing to take a chance were attracted to Akron. The response was from the widest variety of free lance operators; their equipment was not regulated in size or type, and much of it was worn out or certainly inadequate.

Bus Extension in District of Columbia Authorized

The Public Utilities Commission of the District of Columbia has authorized the Capital Traction Company to extend its bus line, now operating between Randle Highlands and Seventeenth Street and Pennsylvania Avenue, Southeast, to the Eastern High School. The rate of fare is to be the same as the current rate of fare in force on the railway lines in the District of Columbia, or such other rate as may be prescribed by the commission. The commission also ordered that transfers between this extension of the bus line and the railway line of the company be issued at 2 cents each. The order is to take effect on May 15.

In authorizing this extension the commission stated in its report that the operation of a bus service over the route covered by the application of the Capital Traction Company would be of advantage not only to those desiring to go to the Eastern High School, but to the residents of the section south of East Capitol Street and east of Thirteenth Street, who are now without adequate transportation facilities. Further, that the operation of this bus line would not conflict with any of the bus routes the Washington Railway & Electric Company had indicated its willingness to operate in the eastern section of the city.

Offers Counter Fare Proposition for Jacksonville

At the conclusion of the hearing before the Florida Railroad Commission on the petition of the Jacksonville Traction Company for an increase in fares, Peter O. Knight, chief counsel, submitted a counter proposition to the city attorney's request that the cash fare be left at 7 cents and that twenty tokens be sold for \$1. Mr. Knight's plan would afford the car riders a lower fare than the present one of 7 cents. The offer called for a cash fare of 10 cents, the sale of five tokens for 35 cents and the sale of weekly tickets at \$1.25. In other words, patrons who would not care to purchase tokens would pay 10 cents for a ride. If they desired tokens, they could ride at the same fare now in effect, and if they bought a pass they could ride an unlimited number of times for the week for \$1.25.

City Attorney Strum, in answer to the offer advanced by Counsellor Knight, declared that a cash fare of 10 cents would more than offset whatever good the token and ticket sales would do. He contended that he had not sought a straight 5-cent fare, but wanted the 7-cent cash fare retained, allowing patrons to ride for 5 cents on tokens. He said that to increase the fare above 7 cents would tend to decrease the number of car riders, which had already been dropping off considerably. To the contrary, Attorney Knight argued that the automobile had

permanently affected the patronage of the railway and that the company's only hope was to get more money for its service.

He stated that the company had paid in dividends to its stockholders \$744,000 during the past twenty-two years. He said that it had paid the city \$371,438 in gross receipts taxes, \$736,000 for paving and \$254,000 in free rides, making a total of \$1,361,000 paid to the city during this period.

The Railroad Commission reserved decisions.

Pittsburgh Men Present Demands

Following a joint conference on April 4 of the company's representatives and the wage scale committee representing the men it developed that 3,000 trainmen of the Pittsburgh Railways, Pittsburgh, Pa., are seeking an increase in wages from the present 67 cents an hour limit to the maximum rates of 75 and 77 cents. A new phase of the matter is the part the city is to play in the controversy.

The demands include a two-year schedule. Up to the present the wage agreements have been on a one-year basis. The wage demands for the two-year period, the second year's rates being a 2-cent an hour increase over the first year's rates, are as follows:

For the year May 1 to April 30, 1925: First three months, 68 cents an hour; next nine months, 73 cents an hour; a year or more, 75 cents an hour.

For the year May 1, 1925, to April 30, 1926: First three months, 70 cents an hour; next nine months, 75 cents an hour; after one year, 77 cents an hour. The present rates of pay are 60 cents for the first three months, 65 cents for the next nine months and 67 cents for those employed a year or more. The present agreement between the company and the carmen expires April 30.

Estimate Board Approves Subway Extension

The Board of Estimate of New York City on April 4 approved a report of Arthur S. Tuttle, its chief engineer, recommending a route for a subway extension of the Fourteenth Street-Eastern subway, and rejected the route submitted by the Transit Commission.

The route approved is somewhat shorter than that submitted by the Transit Commission and was evolved by Mr. Tuttle and Edward Riegelmann, Borough President of Brooklyn. Mr. Tuttle reported that the chief engineer of the Transit Commission had agreed that the substitute route was feasible and it was said that the commission would probably approve it. The cost is estimated at about \$14,000,000.

The extension is proposed as an underground line and will connect two units of the B.-M. T. system, joining the Fourteenth Street-Eastern subway at Meserole Street, Brooklyn, to the elevated system at East New York and spanning a distance of approximately 3 miles. The Transit Commission advocated a similar extension with a large part of the line elevated.

The company's estimate of additional wages to be paid amounts to \$1,638,000.

Foreign News

Swiss Electrification in 1924

The Swiss Federal Railways construction program for the current year, totaling 72,342,550 francs, provides for a substantial amount of electrification. Conversion to this form of operation has been progressing for a number of years, until with the completion of this season's construction all but 260 miles will have been electrified. The program for electrification will be accelerated as much as possible this year, work having begun on the Lucerne-Basel, Thalweil-Richterswil, Zurich-Bern, Sion-Lausanne, Lausanne-Valorbe-Yverdon lines, a total of 242 miles. The Renens-Geneva line is also on the program for this year.

P-L-M Electrification Progress

The Paris-Lyons-Mediterranean line is at present electrifying that portion of its main Franco-Italian section between Culoz (the junction for Bellegarde and Switzerland) and Bardonneche, Italy, via Modane and the Mont Cenis tunnel.

This portion of the line centers around the summer capital of Aix-les-Bains, and on to the Italian frontier. It is the most scenic length of railroad in France; that electric traction, observation and tourist cars should here be first tried out is not astonishing.

The work already would have been put through to Culoz but for the difficulties of the company in securing right of way for its transmission lines across certain private properties of this virtual mountain fastness. It finally was necessary to obtain from the government a public decree and authorization to expropriate the necessary rights. It is doubtful if electrical operation will begin this summer, as was hoped.

Paris Tramway Profit

The Eastern Paris Tramway Company (the unit of the "Transports en Commun" running eastward from the center of the city) announces a net profit of 3,181,931 francs for 1923. This is sensibly the same as for 1922. The company owes for material and supplies 6,754,189 francs, but has carried to reserve for the amortization of bonds the sum of 1,724,790 francs.

New Electric Lines for Upper Savoy, France

The governmental authorities of the French department of Haute Savoie have decided on the construction of electric car lines from Annecy to St. Julien and Annecy to Seyssel and also electrification of the line from Annemasse (the Swiss frontier station) to Samoens, with an ultimate extension as far as the village of Sixt. Another branch line will tap in midway on this latter route. On the Annecy-St. Julien line there will be a reinforced concrete bridge with a single arch of 150 m.

crossing the River Ussets at a height of 147 m.

Work has already begun. The railway construction will be in the hands of separate contractors from those who will build the 45,000-volt transmission lines to serve the railway and to provide light and power along the lines.

Glasgow Studying Subway Situation

Steps are being taken for improving the service, and ultimately of changing over the system from cable to electric traction, of the Glasgow Subway Railway, which recently was purchased by Glasgow Corporation.

The Tramways Committee is considering engineering and traffic reports made by city officials, and plans have been called for to provide improvements in the approaches to certain stations, and to install underground sidings where car repairs can be carried out. This work is all being planned with a view to the electrification of the system. It also was arranged that the waterproofing of the tunnels should be completed.

London Strike Settled

April 1 marked the end of the strike of London tramway employees and the sympathetic strike of London, the General Omnibus Company employees, which began March 22 and continued during the following week. The earlier events were described in this paper last week on page 558. The workmen stood out for an increase in wages of 8s. a week, which the employers said they could not afford to pay. After a few days the trade union representing railway locomotive drivers and firemen announced that unless a settlement was arrived at by March 28, they would call out their members employed on the underground railways and on the electric suburban lines of the main railway systems. By this time the Prime Minister and other members of the Government were taking an active part in the negotiations for a solution, on account of the seriousness of the situation. The Government announced that if the threatened extension of the strike took place the Emergency Powers Act would be brought into operation and everything possible done to maintain passenger transportation in London. On March 28, however, the representatives of the men agreed tentatively to a new offer made by the employers. This provided an immediate advance of 6s. per week for the uniformed men, that the war bonus part of wages should not be affected till the cost of living index figure dropped 8 points below 75, and that wages should be further increased by 1s. for each rise of 4 points. To grades other than the uniformed staff the offer was an increase of 4s. a week immediately and the other terms as above. These proposals were sub-

mitted to a vote of the men. The ballot was taken on March 31, and resulted in the acceptance of the terms by 9,428 votes against 4,377. The services of tramcars and buses were resumed next day.

Interurban Subway Proposed in France

The city engineer of Tourcoing, which with Roubaix and Lille forms a triumvirate of industrial cities with perhaps the most intense interurban traffic in France, has brought forward a project for a new line to connect Tourcoing and Roubaix. The route would be underground for 4 or 5 miles, the remaining 6 or 8 miles being either at surface level or elevated. Traffic conditions have here become such that something of the sort was obviously demanded. Trains under a ten-minute headway were proposed to supplement the present tramway services, which are said to be about the best of their kind today in France, even though in the reconstructed, invaded regions.

The proposition provided for an extension at some future time in the form of a belt subway linking the three industrial cities and the intermediate villages, with double tracks and trains running in both directions.

Continuation of Weekly Pass Recommended.—The manager of the Bradford Corporation Tramways has recommended a continuation of the weekly pass system, which has been under trial. This has caused a certain amount of local criticism, as it is averred that business houses are gaining an advantage by purchasing bundles of passes for their employees. It is also said that the post office is saving £150 a week, as passes have been supplied for the postmen, who may use the pass as often as twenty-five times a day.

Bordeaux Tram and Omnibus Profits Off.—The annual report for 1923 of the Tramways Electriques et Omnibus de Bordeaux shows a net profit of 2,267,844 francs, as compared with 2,578,627 in 1922. The section within the city limits brought in 1,889,052 francs of the total and the suburban lines the remainder.

Assets Turned Over to New Company.—At a general meeting of the Belgian company which owns the Ottoman Tramways and Electricity Company of Beirut, a concession of Syria, now under French mandate, the conditions were fixed upon which the company assets will be turned over to the new French company. The French company will pay 6,000,000 French francs to the Belgian company, which will retire the Belgian stock and bonds by exchanging for those of the French company to the value above set forth. The stock carries 7 per cent and the bonds 4½ per cent interest.

Tube Railway Proposed for Manchester.—The Manchester, England, City Council has appointed a committee to consider the desirableness and feasibility of an underground electric railway running beneath the main arteries of the city and suburbs, and to investigate the probable cost.

Financial and Corporate

Pittsburgh Receivers Report File Final Accounting Covering Their Stewardship for Period Since 1917

The receivers of the Pittsburgh Railways have filed a final accounting in the affairs of the Pittsburgh Railways during the last six years. A feature of the report, which summarizes the six years' work, is that receipts from fares in 1923 increased almost 70 per cent over the amount in 1917, the year preceding the receivership.

The receivers handled \$118,606,987 in fares, improved equipment at least 50 per cent and, about two months ago, turned back the property to its owners in good condition, with more than \$3,000,000 in free cash.

The receipts of the company, as outlined by the receivers, by years follows:

1917	\$13,551,135
1918	14,192,065
1919	16,628,936
1920	21,494,795
1921	21,731,944
1922	21,580,464
1923	22,978,783

With one exception, 1922, each year under the receivership has shown an increase in receipts over the previous years.

The cash in the hands of the receivers on Jan. 31, when the company was turned back to its owners, the report discloses, was \$3,282,715, and the accounting adds:

Against this sum there were outstanding the current bills and monthly payrolls due on that date, and which were assumed by the corporate company.

The seven years' receipts recorded cover also a period in which the fare went from 5 cents to the present 8½ cents, or three tokens for a quarter. In 1918, when the fare was increased from 5 cents to 5½ cents and then to 5 and 7 cents, or zone fares, the receipts jumped more than \$600,000; in 1919, when in July the fare was raised to 7½ cents, or four tickets for 30 cents, receipts increased about \$1,500,000; in 1920, when in September the fare was raised to the present 8½ cents, receipts increased nearly \$3,000,000. In 1922, receipts dropped about \$150,000. This decrease was attributed to industrial depression, for in 1923, fare receipts increased again another \$1,500,000, reaching \$22,978,783, the highest figure ever recorded in the history of the Pittsburgh company.

Then the receivers' accounting goes into what they have attempted in the way of rehabilitating the property. Buying for cash, they point out, they purchased, first twenty-five new cars, then forty, then twelve, then fifty-five cars, with an option for twenty more, or a total of 152 new cars.

The accounting continues:

Earnest and continued efforts were made to comply as near as was possible with the recommendations of the commission. Maintenance of way and structures expenditures were increased from \$1,394,540 in 1918 to

\$3,410,489 in 1923, and the amount of new track laid during each of the past four years was: 31.34 miles in 1920, 23.7 miles in 1921, 45.84 miles in 1922 and 41.83 miles in 1923.

During the period of the receivership a total of nearly \$600,000 has been expended on repairs and reconstruction of bridges.

It is of interest to note that of the various items of work formally demanded in petitions to the court, by the city of Pittsburgh and other municipalities, while each could not be undertaken at the time of original presentation, practically all have been eventually performed and completed.

In this connection earnest effort was made during the year 1923 and January, 1924, to bring to full completion and conclusion every one of the possible 263 items of work in progress during 1923, with the result that the accounts were closed on all but fourteen.

Stabilizing Fund Shows Profit in March

March operations of the Community Traction Company, Toledo, resulted in a profit of \$2,617 for the stabilizing fund after all charges under the Milner ordinance were made. A heavy maintenance was set up for the month to take care of track repairs during the summer months. This added about \$15,000 to the expense as compared with a year ago. In March this year the maintenance set-up was \$70,000.

Gross revenue for the month was \$374,723 and operating and maintenance expense \$307,025. This left net earnings from operations of \$67,698 for the payment of capital charges, depreciation, sinking fund and other fixed charges. After these the net to the stabilizing fund was \$2,617. The number of revenue passengers carried was 5,415,974 in March as compared with 5,813,634 for the same month a year ago.

Due to increased fare, however, there was an increase of 5.3 per cent in revenue. Total passenger revenue was \$349,953 this March as compared with \$331,180 a year ago. Decrease in riding is attributable in part to greater use of private automobiles and a slight tendency for industry to slacken in March.

Toledo & Western Operates Under New Management

The old Toledo & Western Railroad, Toledo, Ohio, was taken over by a new company on April 1 with its one-time receiver, Albert Swartz, in complete charge of operations. The road was purchased from Frank R. Coates of Henry L. Doherty & Company by the Willys-Overland Company and the Wabash Railway about a month ago.

The Ohio Public Utilities Commission has authorized the purchase of the road for \$200,000 and the issuance of \$500,000 of common stock of the Toledo & Western Railway, as the successor company will be known. It is understood that work on improvements at the Toledo terminals will be under way in a few weeks. A new right-of-way and land development for factories and home sites will be part of the plan.

\$150,532 Loss in Providence

Earnings Affected by Unusually Severe
Winter and Unavoidable Delay in
Putting in Economies

The total revenue of the United Electric Railways, Providence, R. I., for the year ended Dec. 31, 1923, was \$8,104,043. The net loss from operation for the year, after deducting all operating expenses, interest, taxes, depreciation, etc., was \$150,532. As the company is subject to the jurisdiction of the Interstate Commerce Commission and is required to keep its accounts in conformity with the methods prescribed by the commission, the difference in the amount of the net loss from operation for the year as shown by the auditor's statement and the amount of the net loss of \$69,501 shown by the company's report filed with the Rhode Island Public Utilities Commission is explained by the treatment of certain items during the year to conform to the requirements of the Interstate Commerce Commission.

On Dec. 24, 1923, the Public Utilities Commission of Rhode Island entered an

CONDENSED INCOME AND SURPLUS ACCOUNT OF UNITED ELECTRIC RAILWAYS FOR YEAR ENDED DEC. 31, 1923

Total revenue from all sources.....		\$8,104,043
Operating expense.....	\$6,499,299	
Depreciation.....	736,316	
Taxes.....	341,618	
Bond interest and other deductions from income.....	677,342	8,254,575
Net loss from operations for the year.....		\$150,532
Less: Miscellaneous adjustments of prior years' expenses.....		120,072
Deducted from surplus.....		\$30,459
SURPLUS ACCOUNT		
Balance Jan. 1, 1923.....		\$1,747,457
		\$1,716,997
Less: Dividends paid.....	\$206,267	
Paid to bondholders in consideration of reduced rate on P. L. bonds, Series A.....	45,040	251,307
Surplus Dec. 31, 1923..		\$1,465,690

order approving the issue of \$1,455,000 par value, prior lien mortgage, twenty-five year, 6 per cent gold bonds, Series C, and \$624,200, par value, common capital stock to be applied to reimburse the company for cash expended for extensions, betterments, improvements and the acquisition of new property in the amount of \$2,079,227. Conditions being unfavorable to the advantageous marketing of the company's securities on Dec. 31, 1923, only \$450,000 par value of Series C, prior lien mortgage bonds had been nominally issued, and these were pledged to secure notes for loans necessary to furnish money for the company's immediate needs. The company explains that when improved conditions permit the sale of these bonds to advantage, the proceeds will be available for further additions and betterments to the company's property as may be required.

During the year 1923 dividends were declared and paid amounting to \$206,267, the last dividend payment having been made July 2, 1923.

In September, 1922, an announcement was made that a reduction in fares would become effective Jan. 1, 1923, by the sale of ten tickets for 50 cents with a 6-cent cash fare. Labor and material prices began to rise, however, and this, with the severe winter conditions, unavoidable delays in receiving new cars and power station equipment and other adverse conditions, brought about a situation which made necessary the passing of further dividends in 1923.

On Nov. 22, 1923, the company filed with the Public Utilities Commission a new tariff providing for the sale of nine tickets for 50 cents instead of ten, this tariff to become effective on the thirty days' notice required by law. On Dec. 24, 1923, this new rate of fare became effective. It is expected that this change will increase the revenue of the company \$422,000 annually.

The new rate of fare will not, however, produce sufficient revenue to meet the cost of service, including in the term "cost of service," in addition to operating expenses, depreciation and fixed charges, the payment of 6 per cent on capital, which is as much a part of the cost of service as the payment of wages to labor. In consequence, application will be made for a rate of fare sufficient to meet the cost of service.

During the year 1923 the company placed under one-man operation sixteen of its lines, making a total of twenty-eight lines now under one-man operation. During the morning and evening rush hours, however, these cars are operated by two men.

During 1922 the company operated 1,781,641 passenger car-miles more than were operated in 1921, or an increase in service of approximately 13 per cent. During 1923, the company operated 16,783,773 passenger car-miles, an increase of 1,129,475 over 1922, or 7.2 per cent, and an increase over 1921 of 2,911,117 miles, or 21 per cent. The term "car-miles" includes passenger and bus miles.

During the year 1922, 126,209,026 revenue passengers were carried. In 1923, 138,578,286 revenue passengers were carried, an increase of 12,369,260 over 1922, or 9.8 per cent.

\$42,166 Balance in London, Ont.

The net income balance for the year ended Dec. 31, 1923, of the London Street Railway, London, Ont., amounted to \$42,166. The gross earnings were \$693,411, of which \$685,608 was from passengers alone. The total operating expenses were \$572,082. Compared with 1922 the gross earnings showed an increase of \$98,827 and the operating expenses also increased \$77,096.

In his annual report, President Charles Currie referred to the company's loss due to the competition of buses. He says that this condition was eliminated in February of last year, when the city demanded from the bus operators reasonable protection for the public against accidents. Early in 1923 the company itself established a bus service for the distance of 1 mile, operating through a growing section.

He refers to the question of municipal ownership being taken up by the City Council during the latter part of

1923. He says that after considerable negotiations the company and the city were unable to agree on a price to be submitted to the voters, and that as a result the Council did not submit the question to a vote of the people at the regular election held in December.

Seeks Issue Approval

Birmingham Electric Company Wants to Float \$8,000,000 in Securities— Tidewater Sale April 15

The Birmingham Electric Company, which company recently purchased the properties of the Birmingham Railway, Light & Power Company, at Birmingham, Ala., filed application April 5 with the Alabama Public Service Commission, at Montgomery, for approval of the issuance of \$8,000,000 securities and the transfer of the old Birmingham Railway, Light & Power Company to the Birmingham Electric Company. The commission set April 16 for the hearing of these applications.

The application for the transfer of the old Birmingham Railway, Light & Power Company to the Birmingham Electric Company states, among other things, that as a result of the reorganization more than \$5,000,000 of securities and obligations of the Birmingham Railway, Light & Power Company, including its \$3,500,000 of preferred stock, will be eliminated from securities senior to the new company's stock and become part of the equity represented by the common stock.

A second application is for the approval of the issuance of securities by the Birmingham Electric Company, which include \$8,000,000 of 6 per cent bonds to be due in 1954, 20,000 shares of no par value preferred stock entitled to a dividend of \$7 a share each year, and on any distribution of assets entitled to payment of \$100 a share, or a total of \$2,000,000, and an issue of no par value of common stock to represent the equity in the property.

It is stated that substantially the entire proceeds of the new bonds are required for payment of existing 5 per cent first mortgage bonds and 6 per cent refunding and extension mortgage bonds of the old Birmingham Railway, Light & Power Company, and the payment of claims filed in the receivership proceedings against the Birmingham Railway, Light & Power Company.

Up to the present time there are no inquiries as to the sale of the Tidewater line, which is advertised to take place at public auction about April 15. There were no bidders at the two former sales. The Birmingham Railway, Light & Power Company operated the Tidewater for some time past, but its successor is under no obligations to continue to operate the line. Officials say the Tidewater line has one of two things in store for it—rearrangement on an economic basis or the junk pile.

The Tidewater line is about 14 miles in length. It operates from East Lake to Ensley. Several miles of the trackage of this line is operated through territory not yet developed. Moreover, the Birmingham Railway, Light & Power Company has been operating two lines to Ensley.

Chelsea Leasing Bill Likely to Pass

The committees on street railways and metropolitan affairs of the Massachusetts Legislature has voted to report the bill to the Legislature for the state to take the Chelsea division of the Eastern Massachusetts Street Railway and then lease it to the Boston Elevated Railway.

Under the terms of the bill the Eastern Massachusetts will receive \$3,000,000 for the property located in Boston, Chelsea, Revere, Malden and Everett, and of this sum the Elevated will eventually pay \$2,000,000 and the communities which are benefited will pay \$1,000,000, to be apportioned in a conference of their representatives.

The measure as drafted has the approval of the two roads and of the city of Boston. It is regarded as the most important step taken in the Massachusetts Legislature in many years toward the solution of a difficult transportation problem, affecting particularly Chelsea and Revere. It will mean the extension of through service and a 10-cent fare to those communities, including Revere Beach.

Mayor Curley of Boston believes that the change will cost the city of Boston about \$10,000 annually, but he is wholeheartedly in favor of it. He contends that it even will facilitate the movement for a Greater Boston by the merging of the independent municipalities. The proposition has had such smooth sailing this year in the Legislature that the prospects of its enactment into law are good.

St. Louis Details Not Yet Arranged

A member of the committee which is working on the plan for the reorganization of the United Railways, St. Louis, Mo., said on April 8 that although no fixed plan could be announced, the agreement contemplates that the \$30,000,000 outstanding general mortgage 4s, due in 1934, will remain outstanding, as the committee has been advised by counsel that there will be no permanent default in these bonds if certain legal requirements are met.

These bonds, it was said, are technically in default because of the default in about \$6,000,000 of the underlying bonds which matured last year. Necessarily the receiver's certificates, the underlying bonds and other temporary or past due obligations will be provided for, the plan being largely confined to the St. Louis Transit Company 5s, of which \$9,790,000 are outstanding, the St. Louis & Suburban Railway general 5s, and to the preferred and common stocks.

The plan also contemplates the conversion of the \$9,790,000 Transit 5s which mature next October into preferred shares of the same amount, thus reducing the bonded indebtedness of the company, and proposes the conversion of the present preferred stock into common shares of no par value, thereby reducing the charge for dividends.

The immediate undertakings of the committee will be to determine, with the Public Service Commission, a proper valuation of the properties, and then to arrange for a new franchise "which will

insure proper service and protection to the car-riding public."

The committee which has evolved the tentative plan for ending the five-year receivership consists of F. O. Watts, president First National Bank of St. Louis; William P. Gest, president Fidelity Trust Company of Philadelphia; J. K. Newman, president Newman, Saunders & Company, Inc., New Orleans and New York; A. L. Shapleigh, president United Railways, St. Louis, and J. Shephard Smith, vice-president Mississippi Valley Trust Company, St. Louis. Newman, Saunders & Company are the agents appointed by the committee to assist in carrying out the plan. The firm will establish offices in St. Louis.

Suit has been filed by attorneys for bondholders of the St. Louis & Suburban Railway asking for the appointment of a separate receiver and a separate valuation by the Missouri Public Service Commission. The decision to bring suit is said to have grown out of dissatisfaction by representatives of the bondholders with the terms proposed to be extended to them for participation in the reorganization of the system.

Foreclosure action under a mortgage securing \$2,000,000 of the Suburban bonds is now pending in the federal court. These bonds are secured mainly by the downtown loop of the Hodiadmont division. An additional issue of Suburban bonds is also in default, but foreclosure proceedings have not been instituted.

The United Railways and Receiver Wells have denied the allegations set forth in the new Suburban petition. The answer of the attorneys for the United Railways specifically denied that the Hodiadmont division of the Suburban owned the downtown loop.

City Counselor Senti of St. Louis has announced that the city will oppose all attempts to separate the two systems. The city's petition will be oral.

Indiana Interurban Suffers Loss of \$179,824 in 1923

The Indianapolis & Cincinnati Traction Company, Indianapolis, Ind., shows in its annual report for 1923, filed with the Public Service Commission, that it had a deficit in gross income of \$11,500. In other words, operating expenses, taxes and depreciation amounted to more than revenues. The deficit for the year was \$179,824, after charging interest on debt and an amortization item against gross income.

Passenger revenue for the year was \$369,623, or \$41,806 less than for 1922. Total operating revenues were \$583,859, or \$43,903 less than for 1922. Operating expenses were cut down \$21,905 as compared with 1922, the operating expenses for 1923 being \$562,403. Operating revenues were \$21,456 more than operating expenses, including depreciation. Taxes were \$34,437. This resulted in a loss in operating income of \$12,981. The non-operating income was \$1,481.

The report shows that \$119,950 interest on bonds accrued during the year and that \$45,275 interest on bonds was paid.

Economist Testifies on Values

Johns Hopkins Expert, in Buffalo Case, Sees Continuation of Present Price Level for Five Years

Testimony on behalf of the International Railway, Buffalo, N. Y., in the valuation case was given by Dr. Jacob H. Hollander, professor of political economy in Johns Hopkins University, before the Public Service Commission of New York on March 25. Dr. Hollander's testimony dealt with the factors affecting the general price level and the probable future price level. In his testimony Dr. Hollander stated that there were two possible ways of discussing the probable trend of prices during the next five years. One he described as "Historical Parallel" and the other "The Method of Analyzing as to Cause."

HISTORICAL PARALLEL METHOD FALLACIOUS

With respect to the method of "Historical Parallel," Dr. Hollander stated that the defect in it is that the historical parallel is meaningless unless it can be established that the same conditions operated or will operate in each successive case. He contrasted the situation after the War of 1812 and after the Civil War with the situation after the World War, pointing out that the two powerful causes for the decrease in prices after the two previous wars had been the return to a gold standard and the scarcity of gold, neither of which causes was present after the World War, as the United States had always maintained specie payments and the country was not threatened with a gold famine, but with a gold plethora. The historical analogy, the doctor stated, fails not only in that the causes which operated after the two early wars are not present after this war, but exactly the converse obtains.

In continuing his testimony, the doctor stated that the tendency, therefore, is to discredit the historical analogy method and turn to the other, or analytical method, which is practically ascertaining what factors influence prices and what may be expected as to those factors.

Dr. Hollander stated the two factors that influence prices are the amount of goods and the amount of money. By means of graphic charts the doctor demonstrated that the industry of the country is operating on a scale unparalleled in our national history and that the basic industries of the country are exceeding the war peak in their volume of production. From this he concluded that if there should be any drop in prices it will not be because of enormous increase in the volume of production.

With respect to any change in the volume of money, money in the business sense meaning the volume of credit, the doctor after explaining charts showing the position of the Federal Reserve system and explaining the Federal Reserve ratio had increased from 40 per cent in 1920 to 80 per cent at the present time, stated that the country was in a situation in which it was practically deluged with gold, and the possibility

of utilizing that increased gold structure for the expansion of credit is so apparent that it makes conservative banking a good deal of a resistance to popular demand from those classes of the community who call for rising prices.

The analytical method, the doctor explained, proceeds on the theory that opinion as to the course of prices is simply trivial unless it is based upon the conclusion drawn from the forces which determine prices. These forces are the volume of trade and the amount of credit. As to the volume of trade, affairs have reached the point where maximum production is in sight. As to the volume of currency, matters are in the position where banking policy and conservative administration are called into play to prevent that expansion which would be the natural consequence of an accumulation of gold. It is a reasonable conclusion, confirmed by the developments of the last year, that banking policy, in so far as it is subject to control, will be in the direction of encouraging price stability and that a period of five years may be expected in which prices are likely to hover approximately around 150, where they have been for the last twelve months.

In reply to the question, "Is the use of the historical analogy for predicting future prices based on anything more than supposition?" the doctor stated:

I think it is not entitled even to be described as supposition. It enjoys no recommendation whatsoever, anything more than it would be to say that because two things look alike, therefore they are alike. To base a conclusion as to what will happen after the third peak upon what happened after the two earlier peaks, without ascertaining whether like conditions prevail, is certainly an uncharted flight into the realms of fancy.

Receiver Appointed for Isle of Palms Company

Perroneau R. Rivers, Charleston, S. C., has been appointed receiver of the Charleston Isle of Palms Traction Company, by order of Judge H. A. M. Smith, in federal court upon petition of the Baltimore Trust Company, Baltimore, Md., trustee under the indenture securing \$250,000 of 5 per cent bonds. The sheriff of Charleston County, on Feb. 21, seized the ferryboats and cars of the company, under attachment proceedings. He was ordered to show cause why he should not be restrained from proceeding to advertise and sell that portion of the property which he seized.

No resumption of operations of ferry and car service is contemplated. Meanwhile a public ferry and bridge service has been provided for in a bill passed by the General Assembly to take the place of service formerly run by the company.

The company was incorporated under the laws of South Carolina on Jan. 9, 1913. It took over the Seashore Division of the Charleston Consolidated Railway & Lighting Company, a line of 10 miles, extending from Mount Pleasant to Sullivan's Island and Isle of Palms, with its equipment and powerhouse on Sullivan's Island. Mount Pleasant and Charleston are connected by ferry by the company by means of two ferryboats.

Kansas Merger Completed

The Topeka Railway & Light Company, Topeka, Kan., has changed its name to the Kansas Public Service Company and taken title to the property of the Atchison Railway, Light & Power Company and the Wichita Railway & Light Company. It will, as formerly, own all the stock of the Topeka Edison Company and the Topeka Railway, and in addition purchase all the common stock of the Kansas Power & Light Company.

New companies have been formed to be known as the Kansas Public Service Company and the Kansas Power & Light Company. Their formation was effected around the Topeka Railway & Light Company, which was the holding company and owned all the stock of the Topeka Edison Company and the Topeka Railway. The Illinois Power & Light Corporation owned all of the stock of the Topeka Railway & Light Company, also the Atchison Railway, Light & Power Company and the Wichita Railway & Light Company.

The Kansas Power & Light Company has been formed primarily to build a new power plant at Tecumseh and transmission lines in Kansas, among them the line from Topeka to Atchison.

Officers of the Kansas Public Service Company are: Clement Studebaker, Jr., president; William A. Baehr, H. L. Hanley, vice-presidents; Scott Brown, vice-president and secretary; George M. Mattis, treasurer, and Edward Woodman, clerk.

Brief mention of the intended merger was made in the *ELECTRIC RAILWAY JOURNAL* for March 22, page 484.

Auction Sales in New York.—At the public auction rooms of A. H. Muller & Sons there were no sales of electric railway securities this week.

Prior Preference Stock Offered.—A new issue of \$7,500,000 Standard Gas & Electric Company, Chicago, Ill., 7 per cent prior preference stock is being offered by H. M. Bylesby & Company, Janney & Company, Hambleton & Company and the Federal Securities Corporation. The stock is priced at 93½, to yield approximately 7.50 per cent. The new financing is part of the plan to retire secured funded debt.

Reorganization Agreement Reached.—The committee representing the refunding 5 per cent, thirty-year gold bonds of the Buffalo & Lake Erie Traction Company, Erie, Pa., amounting to \$7,066,000, notified the holders of these bonds and deposit certificates recently that a plan and agreement for the reorganization of the company have been reached. Alvin W. Krech is chairman of the committee.

Gold Debentures Offered.—A syndicate including Halsey Stuart & Company is offering at 99 and interest, yielding 6½ per cent, \$3,500,000 of the West Penn Railways three-year 6½ per cent gold debentures due April 1, 1927. The railway part of the West Penn system, largely interurban, is located in the Pittsburgh industrial district of southwestern Pennsylvania and in West Virginia.

Stock Issue Approved.—The Public Utilities Commission has authorized the

Central Maine Power Company, Rockland, Me., to issue and sell at not less than par 2,310 shares of its 7 per cent preferred capital stock of the par value of \$100 each. The proceeds of the sale are to be used to reimburse its treasury and discharge indebtedness incurred by its payment of the sum of \$231,000 for the retirement of 2,310 shares of the preferred stock of the Androscoggin Corporation.

Attempts to Keep Line Operating Fail.—Several attempts have been made, since the Connecticut Valley Street Railway shut down, to keep the line in operation between Northampton and Hatfield, Mass., but all efforts have failed. It is said that the road between Northampton and Amherst may be purchased by the Northampton Street Railway.

Bonds Offered to Yield 5.75 per Cent.—The Paine-Webber Company, New York, and R. L. Day & Company, Boston, are offering for subscription at 102 and accrued interest to yield 5.75 per cent \$550,000 of Holyoke Street Railway first mortgage 6 per cent gold bonds dated April 1, 1915, and due April 1, 1935. It is explained that since 1919 net earnings prior to depreciation in each year have been more than three times the interest requirements on the entire funded debt, including this issue. During this period the amount charged to maintenance and depreciation in each year has been more than 23 per cent of the total revenue. Dividends are being paid at the rate of 6 per cent per annum on the capital stock.

Railway Buys Light Company.—The Indiana Public Service Commission has approved the sale of the Geneva Light & Power Company to the Marion & Bluffton Traction Company. The purchase price is \$65,000, of which \$50,000 is payable in cash and the remaining \$15,000 in bonds of the Bluffton-Marion line. The property just purchased furnishes light and power to Vera Cruz, Craigville, Linn Grove, Berne and Geneva in Indiana and Chattanooga, Ohio.

Want to Issue Bonds for Improvements.—The Columbus Railway, Power & Light Company, Columbus, Ohio, has filed an application with the State Utilities Commission for authority to issue \$2,250,000 in bonds, the proceeds to be used to reimburse the company for capital expenditures for further extensions and improvements. The application cites that between Oct. 1, 1921, and Feb. 29, 1924, the company paid out of its treasury a total of \$4,750,565, none of the amount covered by the issuance of bonds, stocks, notes or other indebtedness securities. The railway department benefited in the expenditures to the extent of \$1,571,545, while \$1,501,336 went to the power, light and heat department for transmission, storage and distribution equipment. Land, structures and equipment consumed the remainder of the amount, it is shown.

Preferred Stock Offered.—A syndicate including A. E. Fitkin & Company, New York, is offering \$1,250,000 of the Jersey Central Power & Light Corporation's 7 per cent cumulative participating preferred stock at 92½ per share and accrued dividends to yield more than 7½ per cent. The proceeds

from the present financing will be used to acquire the stock of the Consolidated Gas Company of New Jersey and the Tri-County Electric Company and the balance for other corporate purposes, including additions and betterments to the properties. In addition to its operations in New Jersey the Jersey Central Power & Light Corporation controls the Tide Water Power Company, which owns and operates the entire electric light and power, gas and electric railway business in Wilmington, N. C., and suburbs and other light and power properties in Florida.

Local Service Abandoned in Temple.—Street car service in Temple, Tex., which has been maintained for the last nineteen years by the Belton-Temple Traction Company, has been practically abandoned since the new owners took over the interurban line between Belton and Temple. Service has been abandoned altogether in the northern part of the city, and the line serving South Temple has been shortened and several cars taken off. It was said by the new owners that the local service was a losing proposition and that it could not be maintained. The City Commissioners assented to the abandonment of the service. Tracks of the abandoned lines are being taken up.

Accumulated Deficit \$326,270.—The Sacramento Northern Railroad, operating in Sacramento, Chico, Colusa, Woodland and vicinity, reports to the California Railroad Commission for the year 1923 that its operating revenue was \$1,592,247; operating expenses \$1,361,466, giving a net operating revenue of \$230,781. Interest, rent, taxes and other deductions totaled \$344,484. The corporate loss for the year was \$79,561. The deficit at the beginning of the year amounted to \$203,420. Miscellaneous additions to surplus for 1923 amounted to \$4,587 and miscellaneous deductions were \$47,876, leaving an accumulated deficit at the end of the year of \$326,270.

New York City Traction Offer Investment Opportunities.—William Carnegie Ewen, who has specialized for many years in New York City traction securities, has prepared a frank discussion and a general forecast of the local situation which he calls: "What's Ahead for the New York Traction." He discussed the present political situation and reviews briefly the terms of the existing rapid transit contracts and then concludes: "Viewed from every angle, only one conclusion may be drawn—that the traction companies are on the eve of a period of great prosperity. As time goes on, their strong strategic position will be realized more and more by investors, and as a result we look forward with confidence to a steady appreciation in the value of those traction issues which have an adequate degree of security behind them."

Must Pay Increased Taxes.—The New Jersey Supreme Court has handed down an opinion in the franchise tax case of the city of Phillipsburg, N. J., against the Phillipsburg Transit Company, affirming the contention of the town. This means that the transit company will have to pay increased franchise taxes. In February, 1922, the city complained to the State Tax Board

that the return of gross receipts made by the transit company was incomplete and did not show all of the gross receipts. The city wanted a return for the assessment of the franchise tax, based on the gross receipts from passengers carried in New Jersey and also in Easton, Pa. It is said that fares collected in Pennsylvania were not reported. The state board entered judgment and the Supreme Court upholds the decision.

Unusual Pamphlet Tells Earnings Story.—For the year ended Dec. 31, 1923, the Middle West Utilities Company, Chicago, Ill., a holding company for more than twenty subsidiary companies on which several hundred communities are dependent, reports a net

income of \$2,742,706. The surplus as of Dec. 31, 1923, was \$2,064,417. These facts are contained in the annual report, which is an unusual pamphlet from the point of view of picture display and interesting data contained in its pages. Besides explaining the status of the physical properties involved the booklet describes in detail the company's activities during the year just ended in the matter of customer ownership, employees' life insurance and public relations. Some instructive charts accompany the story of accomplishment. Many scenes depicting the company's doings in the various states it serves are reproduced. To show the plants geographically a map is included locating the various properties.

motor vehicles on the highways. [Rapid Ry. et al. vs. Michigan Public Utilities Commission, 196 N. W. Rep., 518.]

NEW YORK—Consent of City Held to Embrace Consent to Spur in Front of Lots.

Where a franchise is given to operate a railroad on certain streets, and it is reasonably necessary to construct a spur on an intersecting street in order to connect with a carhouse, it may be so laid if no suitable site for the carhouse can be found along the route. [Westchester Electric Railway vs. City of Mount Vernon et al., 142 Northeast Rep., 585.]

NEW YORK—Lease and Modification, When Approved by Two-thirds of Stock, Held Binding.

Under Railroad Law, Sec. 148, a railroad is authorized to lease its property, and this lease becomes binding when approved by the owners of two-thirds of the stock of each corporation. Though the statute is silent as to how such a lease may be modified, it is a fair implication that it may be modified in the same manner. Hence, a provision of a railroad lease that the lessee's guaranty of 7 per cent dividends as rent to lessor's stockholders could not be reduced without the unanimous consent of lessor's stockholders was held to be illegal, as attempting to set up a different agency for the modification of such lease than that established by the law, as mentioned above, and the guaranty did not survive a valid modification of the lease, made as outlined above. [Peabody vs. Interborough Rapid Transit Co., 202 New York Sup. (Sup. Ct.), 287.]

OKLAHOMA—Injury to Leaving Passenger from Car Overhang on Curve.

When a passenger is discharged from a street car at a regular stopping point, he should have a reasonable opportunity to get beyond danger from the movement of the car. The railway company is not bound to warn a pedestrian that he may be struck by the overhang on a car in rounding a curve, since that is a matter of common knowledge, but if the pedestrian is a passenger who has just left the car, the condition is different. [Trail vs. Tulsa Street Railway, 222 Pacific Rep., 950.]

WISCONSIN—Commission May Permit Operation of One-Man Cars, Notwithstanding Municipal Ordinance.

This was an action brought by the city of Milwaukee to set aside an order of the Railroad Commission authorizing the Milwaukee Northern Railway to install one-man cars in its local street railway in Milwaukee. The city of Milwaukee had passed an ordinance requiring all street cars to have a crew of not less than two men. The court held that as the Legislature was the creator of municipal powers, its authority was supreme in such matters, and that it had properly authorized the commission to exercise the power to investigate and decide what constitutes reasonable and adequate service. [City of Milwaukee vs. Railroad Commission of Wisconsin, 196 N. W. Rep., 853.]

Legal Notes

FEDERAL COURTS—Taxation of Property of Street Railways as Personal Property Held Legal.

In 1919 the State tax commissioner of Washington, acting under a state law, assessed a street railway property as "personal property." As so much of the property consists of cars, tracks, poles, appliances, wires and power houses, such an assessment was upheld as legal. [Puget Sound Power & Light Co. vs. King County, 44 Sup. Ct., 261.]

CALIFORNIA—Pedestrian Injured While Walking Around Dirt Pile Wrongfully on Street.

A water company, in violation of ordinance, piled dirt on the street less than a foot from the car track, so that a person crossing the street had either to climb over the pile or skirt it along the track. While doing the latter in the dusk of the evening, a pedestrian was hit by a car. It was held that both water and railway company were negligent. [Hansen vs. Market Street Railway, 221 Pacific Rep., 955.]

INDIANA—Duty to Keep Depot and Platforms Safe Not Extended to Premises Not Adapted to Invitee's Business.

The ticket agent at a station was in the basement when a person stopped to buy a ticket and check his baggage. Not finding the agent, he walked out to the freight platform and fell off a point that was unguarded. The company was held not responsible. [Union Traction Co. of Indiana vs. Grohs, 142 Northeast Rep., 389.]

KANSAS—Purchaser of Street Railway at Receiver's Sale Takes Property Subject to Franchise Liabilities as to Paving.

A person who becomes the assignee of a purchaser at a receiver's sale of the property and franchise of a street railway company takes the property and franchise subject to all the terms and conditions imposed by the franchise, including the obligation to pave certain portions of the streets. Hence, a sheriff, under a tax warrant issued

by the county treasurer to collect this tax, may sell any non-exempt property of the person or corporation holding the franchise. [Fort Scott Public Utilities Co. vs. Sheriff et al., 222 Pacific Rep., 93.]

MASSACHUSETTS—Persons Stepping from Automobiles Must Use Care.

In order to allow a guest riding in an automobile to get out and take the trolley, an automobile was stopped suddenly on the track just beyond a white pole. The automobile driver expected the car would stop at the pole, but it did not and struck the automobile, injuring the person alighting. The court held that in these circumstances the person injured was guilty of contributory negligence. [Will vs. Boston Elevated Railway, 142 Northeast Rep., 44.]

MICHIGAN—Words "Public Convenience and Necessity," as Applied to Motor Vehicles, Include Them Only.

This case arose through a writ of certiorari by the Rapid Railway Company against the Michigan Public Utilities Commission to review an order granting a permit to the Wolverine Transit Company to operate a bus business between Detroit and Mount Clemens. The act under which the commission granted this permit declares that bus permits must be obtained from the commission and "said permit shall be issued in accordance with the public convenience and necessity." The majority of the commission held that the language of this section limited the inquiry to "whether a public convenience and necessity exists as to the motor vehicle business," but the Rapid Railway Company contended that all means of transportation between the points to be served must be considered. The court held, however, that this is not the case, partly because there is no reference in the act to indicate the Legislature had in mind the protection of existing railroad transportation interests, partly because the history of the bill in its passage does not indicate any such intention and partly because the purpose of the bill as declared in its title was to regulate the use of

Personal Items

Mr. Harvey Promoted

Assistant Manager of Toronto Transportation Commission Appointed to Succeed Mr. Couzens

D. W. Harvey has been appointed general manager of the Toronto Transportation Commission, operating more than 200 miles of electric railway formerly included in the system of the Toronto Railway, privately owned, and the Toronto Civic Railway. In that capacity he succeeds H. H. Couzens, who, as noted in the *ELECTRIC RAILWAY JOURNAL* for April 5, has joined the forces of the Brazilian Traction, Light & Power Company. He has been assistant manager at Toronto.

Mr. Harvey is not a difficult man to interview, but it is indeed very difficult to elicit any information from him



D. W. Harvey

about himself. Talk Toronto railways and he is at home. Hint at Harvey as a personage and he is silent. He can see nothing in his own life that should interest others. This is not mock modesty. The distressing thing about it is that Mr. Harvey is sincere in the humility which he shows toward the merits of his own accomplishments.

As Mr. Harvey sees it, to borrow from Elmer Rice, his life has been free from marches and counter marches and any victory on a stupendous scale. About this judgment his associates disagree with him. They are reticent, however, because he is so modest about himself. They know it would be distasteful to him to sing his praises, but they insist upon the value of the performance of the man along the line of permanent, public accomplishments. Not the least of these is the ability—amounting at times almost to genius—which he displays in getting along with other men.

The man has many other merits. Because he had built solidly while with the old Civic Railway at Toronto, Mr. Harvey was made assistant to Mr. Couzens in the fall of 1921, when the lines of the Toronto Railway were

taken over by the commission, and for similar reasons he has now been selected to succeed Mr. Couzens. It was logical that he should be. To them fell the task of rehabilitating the local Toronto lines, and the success they have attained—and it is real, definite success—is due in no small measure to the fact that they were permitted to work out the details in their own way and without political interference.

Mr. Harvey knows Toronto thoroughly. He knows its transportation needs. He really began to visualize them as long ago as 1911, when the first of the so-called civic lines was placed in operation. Of that line he was construction engineer. In 1912 the operation and maintenance were placed under his supervision, and in these capacities he continued until appointed to be assistant manager of the Toronto system in 1921, after the lines of the Toronto Railway had been acquired by the city. Mr. Harvey was born in London, Ont., on Feb. 24, 1887. He was graduated from Toronto University, and before entering railway work he was with the Ontario Power Company and the Toronto Structural Steel Company.

L. H. Palmer and S. E. Emmons Advanced at Baltimore

L. H. Palmer has been elected vice-president of the United Railways & Electric Company, Baltimore, Md., in addition to general manager, and S. E. Emmons has been appointed to the position of assistant general manager.

"Lou" Palmer, as he is familiarly known to his associates, has been general manager of the company since last March. At that time he succeeded in that position Herbert B. Flowers, who resigned to become president of the New Orleans Public Service, Inc. Before that Mr. Palmer had been assistant to the president at Baltimore since October, 1917.

Mr. Palmer is one of the best known men in the transportation side of the industry. He has been particularly active in association work. He was born in Chicago, but his business life has been spent in the East. He was graduated from Williams College in 1902, and then served with both the New York Central Railroad and the old Metropolitan Street Railway, New York. He has been connected with the company at Baltimore since 1915.

Mr. Emmons has been serving for the past two years as assistant to the general manager both under H. B. Flowers and his successor, Mr. Palmer. Previous to that Mr. Emmons had been in steam railway work. He came to the Baltimore company from the position of assistant chief engineer of the Ann Arbor Railroad. He had also served with the Pennsylvania Railroad and the Santa Fé. He was connected with H. E. Riggs on the Toledo valuation.

He was graduated from the Univer-

sity of Michigan, Engineering Department, and during the war was a captain of engineers in overseas service. Mr. Emmons is twenty-nine years old. He is a son of C. D. Emmons, president of the company.

Mr. Boylan Made Manager in New Jersey

M. R. Boylan, acting general manager of the Public Service Railway, Newark, N. J., since last December, has been elected vice-president and general manager. In that capacity he succeeds R. E. Danforth, recently resigned.

Mr. Boylan really established his reputation with the Public Service Corporation as an accountant. As such he has an uncanny capacity for digging quickly to the root of things. This ability he is said to have turned to extraordinary account since he has been handling railway matters, with the result that he has already established for himself a reputation in his conduct of the affairs of the railway both with respect to the economies that he has been able to work and in the direction



M. R. Boylan

of carrying out promptly policies decided upon by him for adoption.

In short, Mr. Boylan has brought to the problems confronting the railway a new and detached point of view, but one that embodies an intimate knowledge of the history of the railway and a keen understanding of the point of view of the public. Mr. Boylan has been with the company since 1892. He is a native of New Jersey. His career was reviewed at length in the *ELECTRIC RAILWAY JOURNAL* for Dec. 1, 1923.

President Finlay Resigns from Montreal Company

William C. Finlay, president of the Montreal Tramways & Power Company, Ltd., Montreal, Que., and three fellow directors have resigned. The retiring directors are J. M. Wilson, George G. Foster and J. K. MacIntyre. Their departure leaves the board in full control of new officers elected at the last annual meeting.

C. N. Wilcoxon, president and general manager Chicago, Lake Shore & South Bend Railway, Michigan City, Ind., has resigned.

Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions
A Department Open to Railways and Manufacturers
for Discussion of Manufacturing and Sales Matters

Philadelphia Company Buys American Locomotive Plant

Announcement was made recently by Arthur W. Thompson, president of the Philadelphia Company, of the purchase of the property and buildings of the American Locomotive Company in Preble and Island Avenues, Northside, Pittsburgh, locally known as Manchester. The price involved was \$1,500,000. More than 11 acres are involved in the purchase, six of which are covered with brick and steel buildings of modern construction. The site adjoins the present Manchester car-house and shops of the Pittsburgh Railways.

The property was acquired for the purpose of consolidating the storehouses of the various public utility properties of the Philadelphia Company, including railway, light, power and gas companies. The Manchester site will be the general storehouse of all these companies, and the office building on Preble Avenue formerly occupied by the administrative forces of the American Locomotive Company, will serve as the headquarters of the general storekeeper, who will operate under the supervision of the general purchasing agent of the Philadelphia Company and affiliated corporations.

New Import and Export Records Made in 1923

New records were made in 1923 in both the country's export and import trade, according to an analysis of American world trade made by the Foreign Commerce Department of the United States Chamber of Commerce.

Statistics of the quantity of logs and timber exported were made available first in 1912, when 664,000,000 b.ft. were exported, the record until the 1923 shipments of 752,000,000 b.ft.

Import records also were broken in 1923, principally in raw materials and partly manufactured goods for domestic industries. Crude rubber imports of 692,000,000 lb. in 1923 were 18,000,000 lb. larger than the 1922 receipts. The 1913 receipts of iron ore—2,595,000 tons—fell far below the 1923 imports of 2,768,000 tons. Imports last year of nearly 2,000,000,000 b.ft. of lumber were 400,000,000 b.ft. greater than in 1922.

For the first time since 1919 exports from the United States show an increase to every continent of the world. Every one of the country's ten leading customers bettered its 1922 purchases. These ten leaders, Great Britain, Canada, Germany, France, Japan, Cuba, Italy, Mexico, Australia and Argentina, take about 75 per cent of the total exports. A few important markets show smaller purchases. The declines in shipments to Belgium and India were so small as to be negligible. Practically

all of the country's chief suppliers shipped the United States more goods in 1923 than in 1922, the only leaders showing declines being Japan and Switzerland.

Washington Is Hopeful

Prospects Ahead Brightened by Report of Commission of Experts—
Situation at Home Is Good

Official circles in Washington see as the brightest spot in the economic sky the prospect for the solution of some of the European difficulties along the lines which are being suggested by the commission of experts. With a favorable turn in European affairs in immediate prospect, strong support for the wheat market is likely to develop. Since the stocks of all commodities in Europe have been held at a minimum, better prospects there would be reflected in the demand for American goods. While the immediate effect would be stimulating to the American market generally, the advance of stabilizing influences in Europe eventually will mean keener competition for foreign markets.

Domestically, industrial prosperity continues to rest on the super-activity of the construction industry. It is the balance wheel which is keeping things going. The public is demanding more room. The building program is going to be more extended than had been estimated. There is every evidence that it will be particularly active throughout 1924 and take up any slack in employment. It is the agricultural industry which is holding things back. A scrutiny of the index figures covering agricultural prices, however, indicates that it is coming closer and closer to the index numbers covering other commodities. Prices of manufactured goods are diminishing gradually as those of agricultural products are gradually rising.

Business as yet appears to be un-

Metal, Coal and Material Prices

Metals—New York		April 8, 1924
Copper, electrolytic, cents per lb.	.....	13.437
Copper wire base, cents per lb.	.....	15.875
Lead, cents per lb.	.....	8.60
Zinc, cents per lb.	.....	6.575
Tin, Straits, cents per lb.	.....	51.25

Bituminous Coal, f.o.b. Mines	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	\$4.20
Somerset mine run, Boston, net tons	2.125
Pittsburgh mine run, Pittsburgh, net tons	1.875
Franklin, Ill., screenings, Chicago, net tons	2.175
Central, Ill., screenings, Chicago, net tons	1.675
Kansas screenings, Kansas City, net tons	2.50

Materials	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	\$6.65
Weatherproof wire base, N. Y., cents per lb.	17.50
Cement, Chicago net prices, without bags	\$2.20
Lined oil (5-bbl. lots), N. Y., per gal.	\$0.93
White lead, in oil (100-lb. keg), N. Y., cents per lb., carload lots	12.25
Turpentine, (bbl. lots), N. Y., per gal.	\$1.00

affected by the epidemic of investigations which are in progress on Capitol Hill. If there is indefinite continuation, however, of the furnishing of great pulpits from which the underworld is to be allowed to pour its vituperation, it is regarded as entirely within the range of possibility to undermine confidence to the extent that business will receive a jar. Thus far, however, it seems that the inherent sanity of the American people is standing them in good stead and they are not being carried off their feet. The government employs 600,000 persons in its service. Despite all the safeguards which are provided, it is humanly impossible to guarantee the probity of each one of the 600,000. Evidence taken in executive session is the buffer which stands between the community and those accused in the malicious statements. There is no thought, however, in the statements here set down of belittling the importance of certain disclosures which have grown out of the congressional investigations.

New Shops for Columbia Machine Works Are Progressing

Rapid progress is being made in the rebuilding of the shops of the Columbia Machine Works, Brooklyn, N. Y., which were recently destroyed by fire. A building of reinforced concrete, steel and brick is being erected which is 500 ft. long and 75 ft. wide. Part of this building is two stories and the south end one story high. The new structure extends along Chestnut Street, from Atlantic Avenue to Fulton Street, and will provide facilities for the blacksmith shop, machine shop and brass foundry.

At present work is being carried on in the buildings which were not damaged by fire, and while these facilities are sufficient to handle present orders, they are inadequate to meet the increasing demand for the company's products. The new shops will be equipped with the latest type of machine tools, which will assist in speeding up production and shorten delivery time. Five or six overhead traveling cranes will be provided in the new building. A 10-ton yard crane is now being erected for handling material in the yard and for loading and unloading cars. Part of the new building will be ready for occupancy in June, but it will require nearly a year to complete the entire work.

Chicago Surface Lines Seeks Bids for 100 Cars

Inquiries are being sent out by the Chicago Surface Lines for bids on the construction of 100 new double-truck arch-roof motor cars. They are to be equipped with two 65-hp. motors each and multiple-unit double-end control for operation as single cars or in trains. The doors on both sides of each vestibule will be pneumatically operated and arranged so that quick loading and unloading can be accomplished in street or subway operation. In either direction of operation the rear doors may be controlled by an operator on either

platform or by a street collector. The exit door at each end will be of the new automatic type which was used on a group of forty-five one-man cars described in the *ELECTRIC RAILWAY JOURNAL* of Sept. 30, 1922.

The specifications are as follow:

Number of cars.....	100
Name of road.....	Chicago Surface Lines
Type of car.....	Multiple-unit, double-end
Total weight.....	38,000 lb.
Bolster centers, length.....	22 ft. 0 in.
Length over all.....	48 ft. 11 in.
Truck wheelbase.....	4 ft. 10 in.
Width over all.....	8 ft. 6 in.
Height, rail to trolley base.....	11 ft. 6 in.
Body.....	Semi-seel
Interior trim.....	Cherry
Headlining.....	1-in. Agasote or 1/2-in. plywood
Roof.....	Arch, 1-in. plywood
Air brakes.....	Straight air with emergency feature
Signal bells and buzzers.....	Consolidated, or equal
Car trimmings.....	Bronze, statuary finish
Center and side bearings.....	Railway standard, plain
Conduits.....	Dura ube or equal, and aluminum
Control.....	Multiple unit
Couplers.....	Automatic, with air jumpers for electric circuits
Curtain fixtures.....	Rex roller, fixtures to be approved
Curtain material.....	Double face
Des inntion sigas.....	Hunter illuminated or equal
Door operating mechanism.....	National Pneumatic or equal with automatic exits
Wheelguards.....	H. B.
Hand brakes.....	Pittsburgh No. 35 or equal
Hand straps.....	Rico No. 7
Heater equipment.....	Consolidated cross seat or equal
Headlights.....	Railway standard pressed steel
Lightning arresters.....	M. D. or equal
Meters.....	Economy
Motors.....	2-65 hp. outside hung
Paint, varnish or enamel.....	Chicago varnish and Vitrolite enamel
Rails and stanchions.....	Aluminum
Registers.....	International R-7 or equal
Roofing Material.....	No. 8 ational prepared roofing
Sanders.....	Electric Service No. 135-A or equal
Sash fixtures.....	O. M. Edwards or equal
Seats.....	Ratt. n fullspring upholstered
Step treads.....	Kass or equal
Thermostat.....	Ry. Utility or equal
Trolley catchers.....	Ohio Brass or equal
Trolley base.....	U. S. 14 or equal
Trolley wheels.....	Railway standard
Trucks.....	Maximum traction
Ventilators.....	Railway Utility or equal
Wheels.....	Rolled Steel, 28 in.

Belgian Concern Active in Building Motors

The progress of the Ateliers de Constructions Electriques de Charleroi, Belgium, gives a striking illustration of the industrial recovery of Belgium. From a pre-war force of 800 men and 510 machine tools, this Charleroi manufacturing shop has increased to a personnel of 4,100 and 2,000 machine tools.

Among its various manufactures is a line of traction motors which constitute an important department of the concern. Subsequent to the war motors of 25 hp. at 500 volts have been manufactured, and more recently a 30 hp. size. As a matter of fact, Charleroi works as early as 1900 built a complete series of motors ranging from 20 to 225 hp., for a gage of 1,435 meters.

With the growth of tramway services and the general reduction of the gage to 1,000 meters, the Charleroi works developed a new series of motors more compact in design and comprising 50 hp. motors at 700 volts, equipped with four commutator poles. This type of motor now competes actively in Europe with American built motors.

The company is now engaged in developing a new series of motors with forced ventilation, with the idea of securing maximum power with minimum space and weight. All air holes are to be supplied with protecting screens against water and dust, which, it is said, can be so arranged as to give all the effect of an armored motor.

Rolling Stock

Pittsburgh Railways, Pittsburgh, Pa., has placed an order for 200 new cars.

Madison Railways, Madison, Wis., will purchase seven or eight new cars if the recommendations of the Wisconsin Railroad Commission are carried out.

New Orleans Public Service, Inc., New Orleans, La., will soon ask for bids on fifty-five cars.

Track and Line

Spokane United Railways, Spokane, Wash., will rebuild tracks on Riverside Avenue, between Lincoln Street and the Monoghan monument, with new rails and ties, set in solid concrete. The double curve that now exists will be removed and one long curve installed.

Kansas City Railways, Kansas City, Mo., has applied to Judge Stone for permission to extend its line on South Prospect Avenue to Fairyland Park and to rebuild various stretches of track at an expenditure of \$500,000.

Wichita Railroad & Light Company, Wichita, Kansas, plans to extend the College Hill division from Roosevelt to Belmont, a distance of five blocks. Howard Patten, general manager, has estimated the cost of this improvement at \$18,000. Construction of the extension will start soon.

New York, N. Y.—Contractors' bids for the construction of the main stem of the crosstown subway in Brooklyn, in Bedford Avenue from DeKalb Avenue to Keap Street, will be received by the Transit Commission on April 25. The commission unanimously selected April 25, on motion of Commissioner Harkness that the construction work be proceeded with forthwith. This will be the first of the construction contracts for the new lines, but the commission has already submitted to the Board of Estimate proposals for the making of test borings along Bedford Avenue and for the removal of the memorial trees along that thoroughfare.

Seattle Municipal Railway, Seattle, Wash., has started on its summer construction program, involving an expenditure of nearly \$750,000, under supervision of A. E. Pierce, superintendent of maintenance. An order for 600 tons of heavy steel trackage, costing \$420,000, has been placed by Mr. Pierce. The work involves renewal of special trackage at Second Avenue and Pike Streets; new cable crossings and foundations, costing \$30,000, at Third Avenue and James Street, and Third Avenue and Madison Street. These jobs call for replacing present crossings, excavation of concrete bed, and building up steel and concrete foundation work 26 ft. square and 39 in. deep below the track level. Track renewals in various parts of the city, paving of three spur tracks and surface reconstruction and repaving between tracks complete the work. The largest single job will be the retracking of Westlake Avenue from Roy Street to the Fremont bridge, to cost \$100,000.

The Nashville Railway & Light Company, Nashville, Tenn., will spend more than \$600,000 in 1924 on its construction program. It is proposed to rebuild 12.58 miles of track, which it is estimated will cost \$280,000.

Power Houses, Shops and Buildings

New Orleans Public Service, Inc., New Orleans, La., expects during the next month and a half to have the 20,000-kw. generator for the Market Street power station and three months after arrival it is expected to be in operation. The generator, condenser, switchboard and other appliances will cost \$1,200,000.

Manchester Traction, Light & Power Company, Manchester, N. H., has awarded a contract to Stone & Webster, Inc., Boston, Mass., for the installation of vertical hydraulic turbine units of 2,400 and 3,200-kw. rating at its Garvins Falls station on the Merrimac River and of a vertical unit of 1,000-kw. rating at Kelly's Falls, on the Piscataquog River. The Kelly's Falls plant will be equipped with full automatic control, with additional provision for supervisory control from the company's adjacent steam plant.

Trade Notes

H. E. Pratt, formerly vice-president of Babcock & Wilcox Company, New York, N. Y., has been elected president of the company, succeeding W. B. Hoxie, who becomes vice-chairman. E. H. Wells remains chairman. Isaac Harter, general superintendent, succeeds Mr. Pratt as vice-president.

Quigley Furnace Specialties Company, New York, N. Y., will move its Chicago office to larger quarters, on May 1, at 9 South Clinton Street.

Industrial-Utilities Service Bureau is now located in Suite 509, M. E. Taylor Building, Louisville, Ky.

White Company, Cleveland, Ohio, has received word that the last shipment of thirty White Model 20 buses, completing an order of sixty, has reached Tokyo, Japan, to go into the service of the Tokyo Bus Company. The Tokyo Bus Company, with the addition of the sixty new jobs, now operates sixty-seven Model 20 White buses, which is one of the largest bus fleets in operation outside the United States. All of these jobs are equipped with eighteen-passenger bodies.

New Advertising Literature

International Engineering Corporation, Malden, Mass., has issued a pamphlet describing the working of the International "Automatic" Painting Machine.

Heine Boiler Company, St. Louis, Mo., has issued Bulletin 54, an illustrated pamphlet on the Lent-tube boiler V-type. The construction, design and need of this equipment are discussed in its pages.



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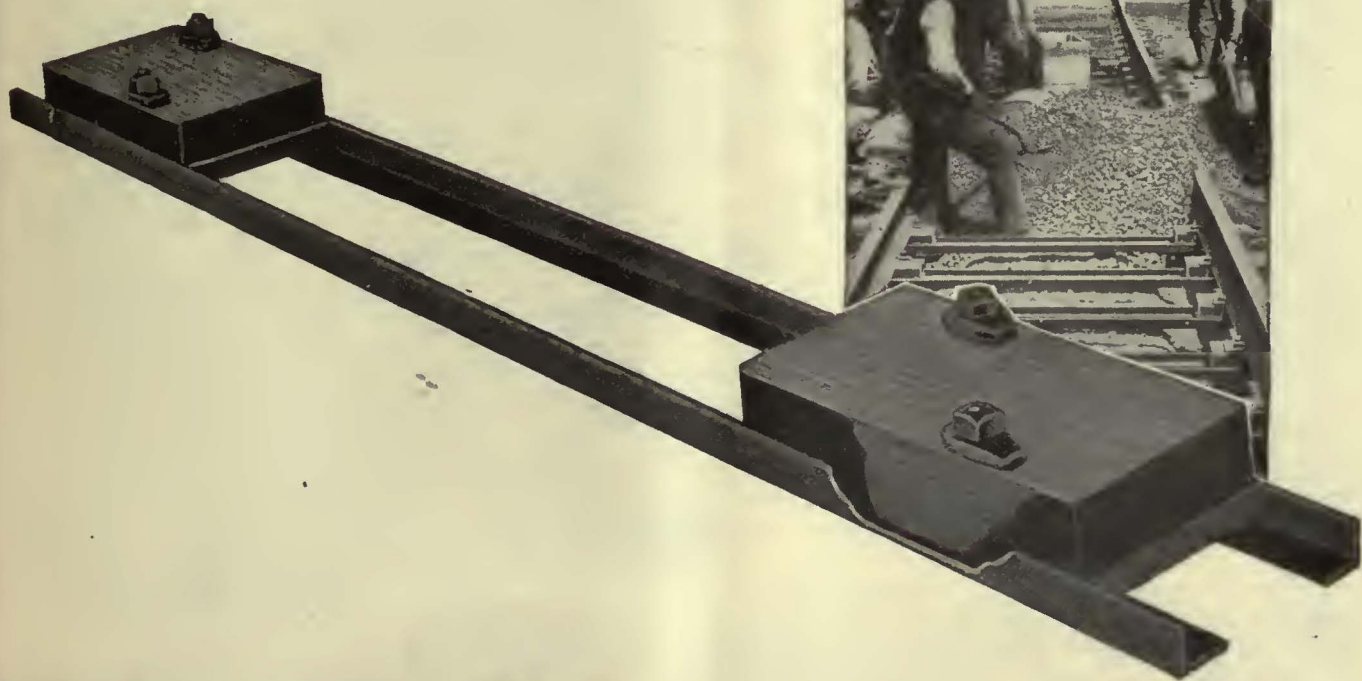
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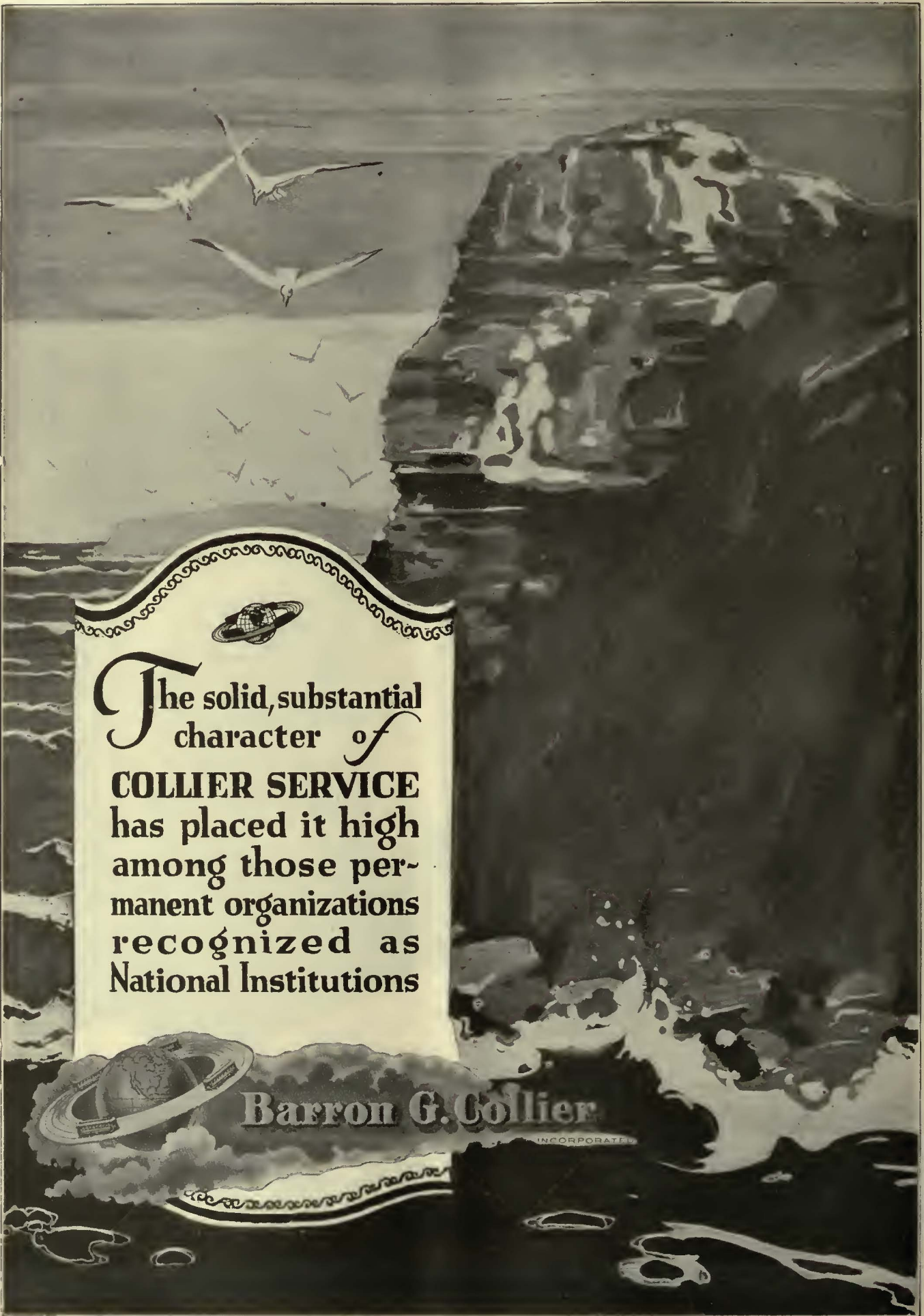
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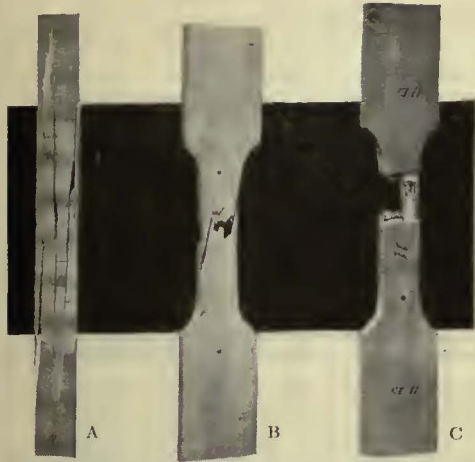
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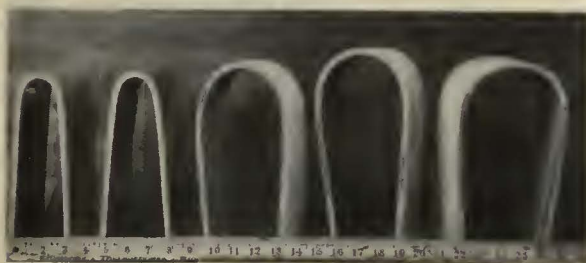
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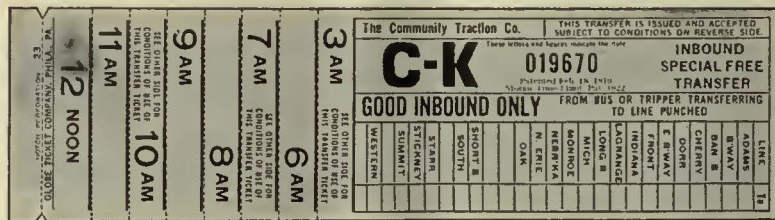
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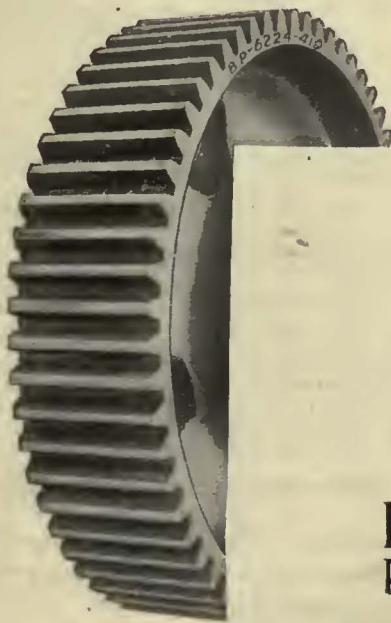
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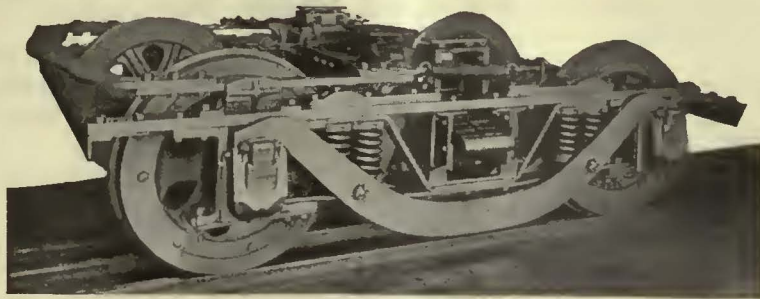
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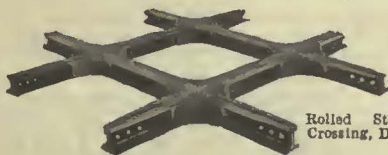
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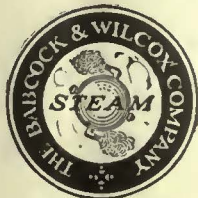
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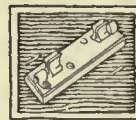



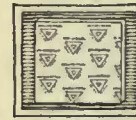
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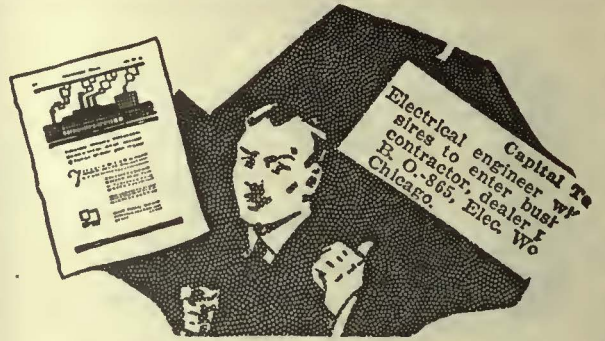


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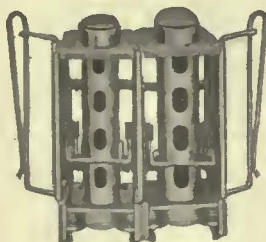
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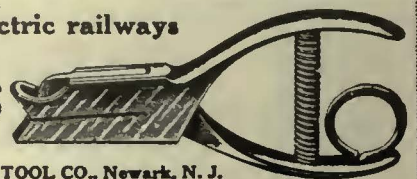


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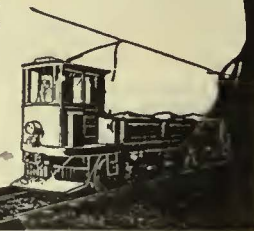
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Of Electric Railway Journal, published weekly at New York, N. Y., for Apr. 1, 1924.

State of New York }
County of New York } ss.
Before me, a Notary Public in and for the State and county aforesaid, personally appeared C. H. Thompson, who, having been duly sworn according to law, deposes and says that he is the Secretary of McGraw-Hill Company, Inc., Publishers of Electric Railway Journal, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

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C. H. THOMPSON, Secretary.
Sworn to and subscribed before me this 26th day of March, 1924.
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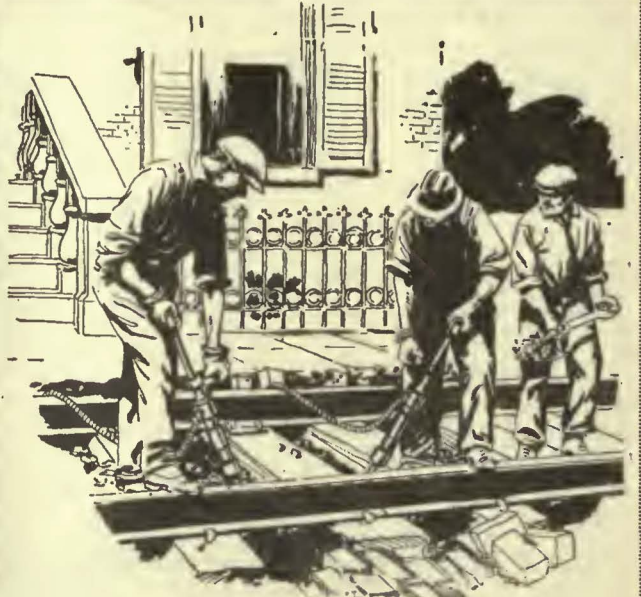
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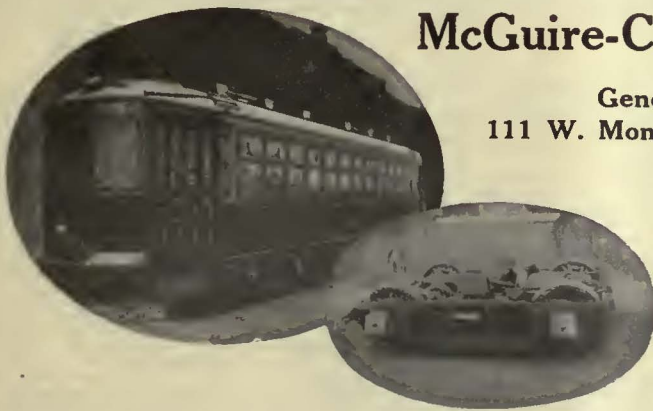


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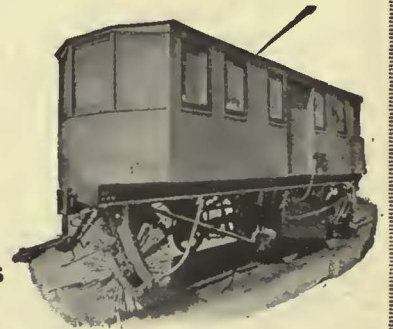
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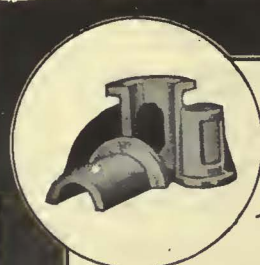


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