

ELECTRIC RAILWAY JOURNAL



100,000 Miles a Year for the Interstate Public Service Co.

In the last year, four of the twelve Model 50-A White Busses in the service of the Interstate Public Service Company have averaged 360 miles a day for each bus on a run between Indianapolis and Seymour, Ind. The bus route parallels the company's electric line the greater part of the run. These busses were just a year old August 3, 1925, and each of them then had run considerably in excess of 100,000 miles. Seven other White Busses that Interstate bought at the same time, although they haven't been operated on such an exacting schedule, are approaching the same mileage record.

In the year that ended last August 1, the eleven White Busses carried a total of 322,881 passengers.

In speaking of White Bus performance, C. M. Bange, superintendent of motive power, says: "Our eleven White Busses came through the first hard year of service with only routine inspection and maintenance."

Electric railways have purchased more than 1,300 White Busses —far more than any other make.

THE WHITE COMPANY, *Cleveland*

WHITE BUSES

MADE RIGHT — SOLD RIGHT — KEPT RIGHT

Meeting the Requirements — Of Service —



The Colonial Express—Boston to Washington, N. Y., N. H. & H. R. R.

Trunk Line Electrification

THE railroads, having faith in the growing prosperity of our country and realizing the important place that transportation occupies in our industrial development, are making large expenditures to meet the transportation requirements. Trunk line electrification is a major improvement which must not be overlooked, as it makes possible the handling of through passenger and freight trains with the greatest ease, dispatch, and dependability.

Westinghouse Electric & Manufacturing Company
East Pittsburgh, Pennsylvania
Sales Offices in All Principal Cities of the
United States and Foreign Countries



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ELECTRIC RAILWAY JOURNAL

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CONTENTS

Pages
55-94

January 9, 1926

Editorials	55
Attractive Cars Put Buffalo & Erie Railway on Paying Basis	58
This road, which was a losing venture for sixteen years, is rapidly recovering with the aid of light-weight, one-man, high-speed cars designed to attract passengers and reduce operating costs.	
Statistics of the Industry	64
Table just compiled shows number of companies, miles of track and types of cars used in the United States.	
Photography an Aid to the Railways	65
A survey covering 50 representative companies shows extensive utilization of photographs. Claims department work, publicity and progress records of construction are the principal uses. A majority of the railways have private photographers. Advantages and disadvantages of this practice are discussed.	
Interurban Bus Lines Operated by City Railway	67
Trenton & Mercer County Traction Corporation has extended its service to points 65 miles distant. Traffic shows marked seasonal fluctuations. All buses start from a central terminal.	
Cars Faster than Buses in Test	67
Service Speeded Up by West Virginia Line	68
Valuation Principles in Baltimore Case	69
By W. H. MALTBE.	
An extended analysis is given of the methods used recently to obtain for the United Railways & Electric Company of Baltimore figures for original cost, reproduction cost of physical property, undisturbed structural costs, going value, depreciation and present value.	
Oil-Electric Locomotive for Long Island Railroad	75
This equipment is intended to supplement electric and steam equipment now in service and may be operated over electrified sections of the road.	
The Readers' Forum	76
JOURNAL'S Analysis of Coffin Prize Presentation Commended...76 Motorman or Locomotive Engineer	
Railway Assists in Community Drive in Baltimore	76
Association News and Discussion	77
American Association News	77
Maintenance of Equipment	79
Filling Cracks in Concrete Pavement	79
Night Inspection of Trolley Wire	79
Rolling Scaffolds Used for Building Maintenance	80
Machine for Cleaning Cane Seats	80
New Equipment Available	81
Extremely Sensitive Bond Tester Produced	81
Portable Pipe-Threading Machine	81
News of the Industry	82
Recent Bus Developments	82
Financial and Corporate	88
Legal Notes	89
Personal Mention	91
Manufactures and the Markets	92

Service Doesn't Just Happen

SOMETIMES we become so accustomed to receiving certain service that we are apt to forget that it isn't simply automatic—that carefully planned human endeavor is needed to produce it. So it is with many of us in regard to the postal service. We take it as a matter of course. And sometimes a reader who does not give the matter consideration may overlook the character of service that ELECTRIC RAILWAY JOURNAL has rendered its industry for more than forty-one years. For that reason it is particularly gratifying to have an old subscriber write us what he thinks of the paper. A recent comment of this kind is as follows:

"In the period during which I have received your magazine I have always found it up to date in every respect, excellently organized, well supplied with material, ably edited and most thoroughly covering its field. It is the best technical publication of any kind that I have seen."

Thank you!

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A Westinghouse automatic substation recently installed by the Connecticut Company at Branford, Connecticut.

More Crowds* More Profits

—if you can move them*

BASEBALL and football games, hockey, boxing, basketball, lectures, recitals, all bring added profit to the street railway which has the reserve capacity to handle such crowds.

Reserve capacity is best provided by Westinghouse automatic substations which are free from attendance costs.

These substations are on the line only when needed.

They make practical the location of the substations at load

centers, thereby resulting in a saving of feeder copper, and in better voltage regulation.

Westinghouse automatic switching equipment gives unequalled protection to the apparatus, and lessens the liability of expensive shut-downs for repairs entailing loss of revenue and loss of good will.

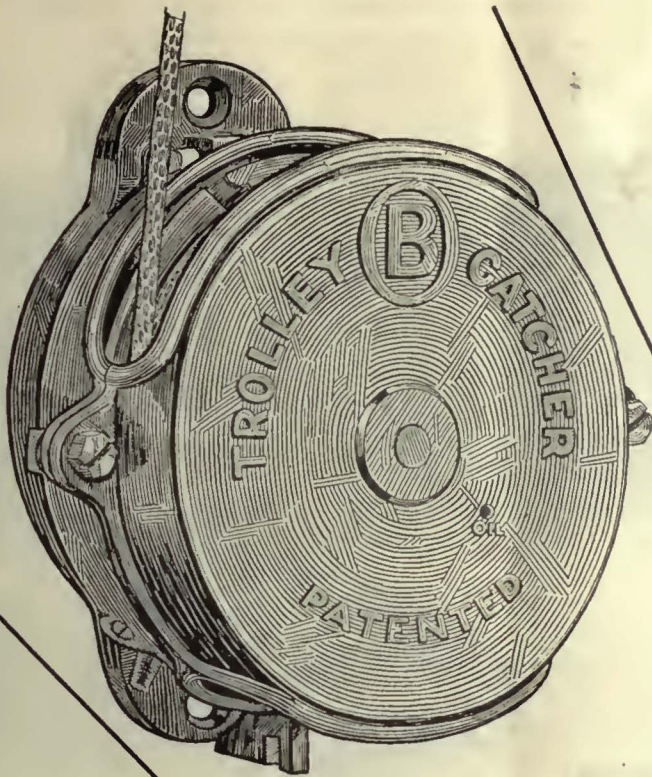
Better protection also reduces maintenance costs. It assures minimum interruption of service with maximum safety for equipment.

Westinghouse Electric & Manufacturing Company
East Pittsburgh Pennsylvania

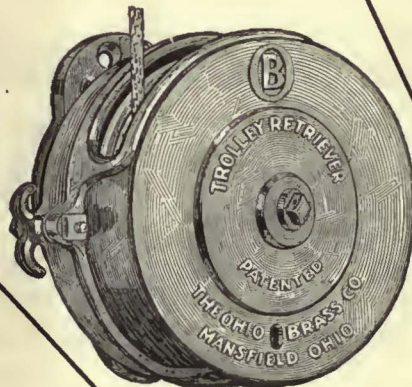
Sales Offices in All Principal Cities of
the United States and Foreign Countries



Westinghouse



O-B Trolley Catchers and Retrievers are packed in individual cartons, easily handled in the store room.



WHICH WOULD YOU PREFER—several spans of trolley line put out of commission by a flying trolley pole, or real overhead protection by means of good trolley catchers and retrievers?

Of course the mechanical department "should worry about line expense." But the line superintendent will holler about the needlessness of this trouble and the transportation superintendent will complain about this avoidable delay in his service.

What master mechanic wants to leave himself thus vulnerable before the G. M.? In the end any expense comes out of the same pocketbook.

The occasion for catching or retrieving action may be infrequent. Avoiding tearing down the overhead just once will pay for O-B Catchers or Retrievers on many of your cars.

And don't forget that O-B Catchers and Retrievers have a reputation for going into action at the critical moment—at the instant they are needed—every time a dewirement occurs, and that may be pretty frequently.

OHIO BRASS COMPANY
 Mansfield Ohio
 Dominion Insulator & Mfg. Co., Limited
 Niagara Falls, Canada



Ohio Brass Co.

PORCELAIN INSULATORS LINE MATERIALS RAIL BONDS CAR EQUIPMENT MINING MATERIALS VALVES.



Helping a City's Traffic Problem



As an aid in the solution of city transportation problems many street-railway companies are operating two-car multiple unit trains on lines where traffic is heavy. A valuable equipment for such service is the Westinghouse "Tight Lock" Car and Air Coupler. By means of this device both the mechanical and pneumatic connections are made between cars at the instant of impact.

These connections are made automatically—thus saving valuable time; they are made without the necessity for trainmen to go between the cars, and are held rigidly together by the "tight lock" feature. The convenience, safety, and economy in make-up and operation of trains is thereby increased.

Westinghouse Traction Brake Company

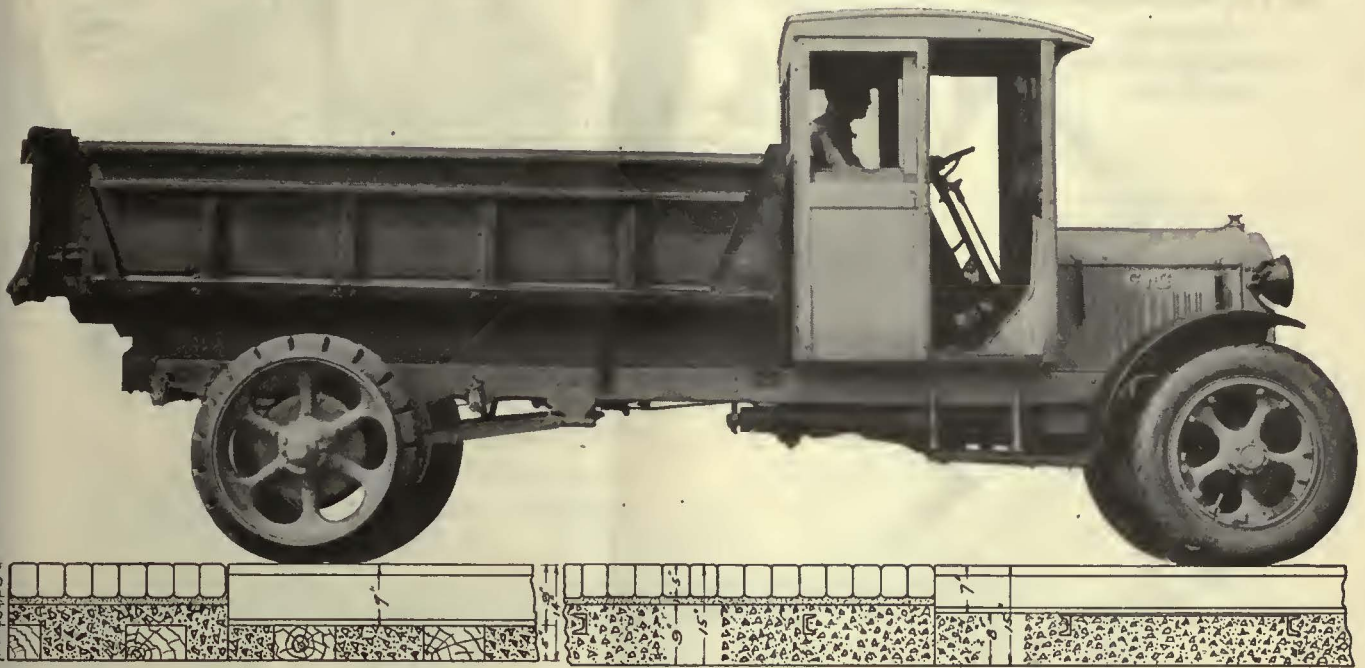
General Office and Works: Wilmerding, Pa.

Type K-1 Coupler, which automatically makes mechanical and pneumatic connections between cars.

Electrical connections may also be made by incorporating a set of contacts in the coupler head. This is the K-1-A Type.



WESTINGHOUSE TRACTION BRAKES



The rear wheels of this truck rest on a typical longitudinal cross-section of track using wood ties—the front wheels on a standard steel tie cross-section. Notice how the wood ties break up the paving support and reduce its depth while the steel tie track is all effective as paving foundation.

The Concrete Is Both Paving Base and Track Support With *Steel Twin Ties*

Another point about Steel Twin Tie Construction of growing importance in these days of heavy vehicle loading on track and paving — *the concrete used acts as a direct paving support as well as a well designed track foundation.*

There are no points as in wood tie construction, where the paving foundation is reduced in depth by a perishable material which

divides the concrete into 16-inch blocks.

Such advantages of twin tie track are backed up by first-cost savings in concrete excavation and material, which make this quality construction cost less than wood ties in ballast.

*We are now offering cost figures collected during 1925.
May we send them to you?*

THE INTERNATIONAL STEEL TIE COMPANY
Cleveland, Ohio

Pantasote
for car seats and curtains
Agasote
for roofing, headlining,
interior trim



North, South, East and West

Wherever electric cars
are operated you'll find
Pantasote and Agasote

*In the
great industrial cities*

*Pantasote Products
would not be so
universally used un-
less Economy pre-
vailed after all!*

*Specify them for your buses
also!*

WARNING!

**There is
no substitute
for Pantasote**

- | | |
|--------------------|---------------------|
| Bridgeport, Conn. | Chicago, Ill. |
| Philadelphia, Pa. | Detroit, Mich. |
| New York, N. Y. | Milwaukee, Wis. |
| Newark, N. J. | Rockford, Ill. |
| Rochester, N. Y. | Grand Rapids, Mich. |
| Providence, R. I. | Hartford, Conn. |
| Springfield, Mass. | Dayton, Ohio |
| Worcester, Mass. | Springfield, Ohio |
| Akron, Ohio | Columbus, Ohio |
| Cleveland, Ohio | Toledo, Ohio |

Go into any of these key cities of American Industry and you will find Pantasote and Agasote in service on their electric railway systems.

Some use Pantasote for car curtains, some for car seats, some for both. Agasote you'll find as a roof material, as a headlining and as a general interior trim.

The point is, that Pantasote Products have been ordered and re-ordered over periods up to 25 years and more

Such a record can mean only one thing,—*basically satisfactory and economical service.*

And you too can be assured of such service by specifying and insisting upon only *genuine* Pantasote and Agasote.

The PANTASOTE COMPANY Inc.
At 46th - 250 Park Avenue - Street
NEW YORK



**Pantasote Products
for Both
ELECTRIC RAILWAYS
AND
BUSES**



**The road to Coral Gables—
and its Keystone equipped cars**

ALL eyes are turned to Florida. Its sudden leap into unparalleled prominence, as the Winter Paradise of America, has focussed attention on every item of news emanating from within its borders.

No wonder, then, that the railway field has noted with unusual interest the details of the Coral Gables Car. Its lines and general design are reminiscent of the old Spanish type of architecture, while its equipment and auxiliary devices include only the latest and best in modern transportation practice.

The choice of numerous items from the Keystone line is typical.



Hunter-Keystone
Destination Signs

Golden-Glow
Headlights

Faraday
Passenger Signal System

Keystone
Rotary Gongs

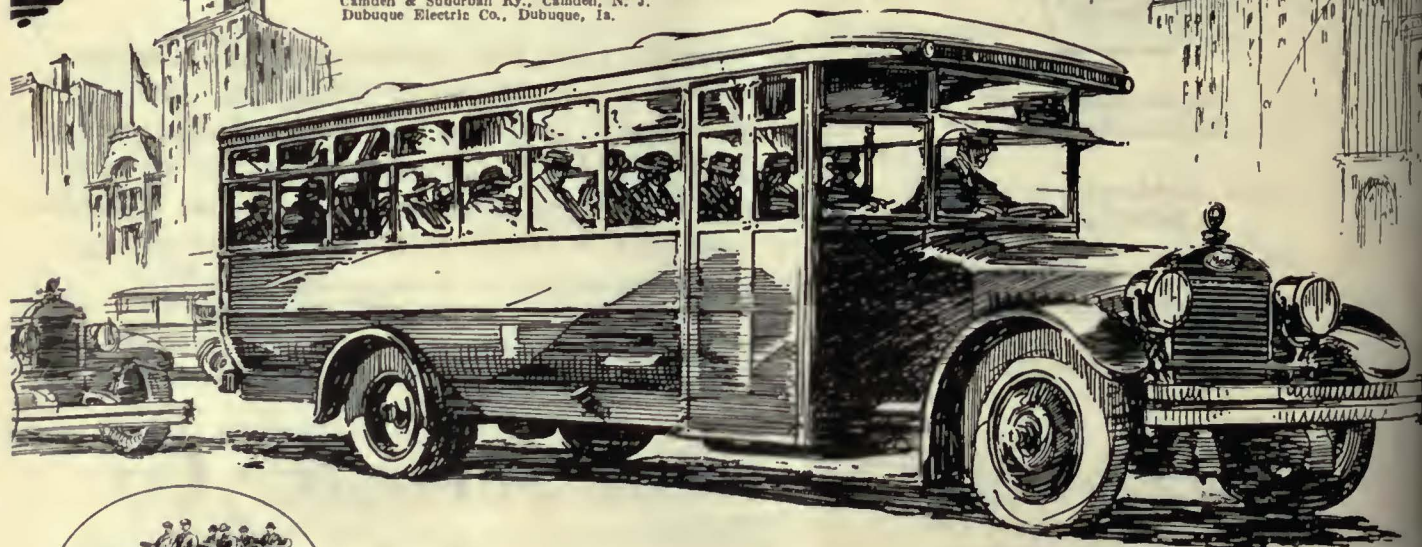
ELECTRIC SERVICE SUPPLIES Co.

PHILADELPHIA 17th and Cambria Sts.	NEW YORK 50 Church St.	CHICAGO Illinois Merchants' Bank Bldg.
PITTSBURGH 839 Oliver Building	BOSTON 88 Broad St.	SCRANTON 316 N. Washington Ave.
Lyman Tube & Supply Co., Ltd., Montreal, Toronto, Vancouver		
DETROIT General Motors Building		

The Operator's Check

Partial List of Electric Railways Now Operating Mack Buses

- ✓ Municipal Tramways Trust, Adelaide, S. Australia
- Illinois Power & Light Corp., Chicago, Ill.
- The Connecticut Co., New Haven, Conn.
- Chicago, West Towns & Northern Railroad, Chicago, Ill.
- Lehigh Traction Co., Hazleton, Pa.
- United Electric Railway Co., Providence, R. I.
- Columbus Railway, Power & Light Co., Columbus, Ga.
- Boston Elevated Railway, Boston, Mass.
- Waterloo, Cedar Falls & Northern Railroad, Waterloo, Iowa
- Northern Ohio Traction & Light Co., Akron, Ohio
- Illinois Power Co., Springfield, Ill.
- Boston & Worcester Street Railway Co., Framingham, Mass.
- Mississippi Valley Electric Co., Iowa City, Iowa
- New Orleans Public Service Co., New Orleans, La.
- Tampa Electric Co., Tampa, Fla.
- Chicago, South Bend & Northern Railroad, Chicago, Ill.
- Chicago & Joliet Electric Railway Co., Chicago, Ill.
- Key West Electric Co., Key West, Fla.
- Iowa Southern Utilities Co., Inc., Des Moines, Iowa
- Holyoke Street Railway Co., Holyoke, Mass.
- Durham Public Service Co., Durham, N. C.
- Coast Counties Gas & Electric Co., San Francisco, Cal.
- Hartford & Springfield Street Railway Co., Hartford, Conn.
- Worcester Consolidated Street Railway, Worcester, Mass.
- Youngstown Municipal Railway, Youngstown, Ohio
- Binghamton Railway Co., Binghamton, N. Y.
- Wisconsin Power & Light Co., Madison, Wis.
- Kansas City Railways, Kansas City, Mo.
- Iowa Railway & Light Co., Des Moines, Iowa
- Omaha & Lincoln Railway & Light Co., Omaha, Neb.
- Arkansas Central Power Co., Little Rock, Ark.
- City of Ashtabula, Ashtabula, Ohio
- Twin City Rapid Transit Co., St. Paul, Minn.
- Wilkes-Barre Railway Co., Wilkes-Barre, Pa.
- Phillipsburg Traction Co., Phillipsburg, N. J.
- Wilmington & Philadelphia Traction Co., Wilmington, Del.
- Nashua Street Railway Co., Nashua, N. H.
- Union Street Railway Co., New Bedford, Mass.
- Baton Rouge Electric Co., Baton Rouge, La.
- Lordship Railway Co., Bridgeport, Ct.
- Municipal Railway, Eureka, Calif.
- Trenton & Mercer County Traction Corp., Trenton, N. J.
- Illinois Power & Light Corp., Decatur, Ill.
- Wichita Ry. & Light Corp., Wichita, Kans.
- Topeka Railway Co., Topeka, Kans.
- Illinois Power & Light Corp., Bloomington, Ill.
- Duluth Street Railway Co., Duluth, Minn.
- Mesaas Railway Co., Virginia, Minn.
- Kansas City, Leavenworth & Western Ry., Kansas City, Mo.
- Oklahoma Union Railway Co., Tulsa, Okla.
- Virginia Ry. & Power Co., Norfolk, Va.
- Syracuse Co-ordinated Bus Line, Inc., Syracuse, N. Y.
- Utica Co-ordinated Bus Line, Inc., Utica, N. Y.
- Third Ave. Ry., New York City
- Camden & Suburban Ry., Camden, N. J.
- Dubuque Electric Co., Dubuque, Ia.



The first bus was a Mack
the first Mack was a bus



Typical Performance 21 Macks in City Service of The Connecticut Company

Since the first Mack Bus was purchased in May, 1923, the Connecticut Company, of New Haven, Conn. have placed twenty more Macks in city service. Their action duplicates that of other railway companies who have repeatedly come back for more.

Repeated starting and stopping—rough going on slippery streets—day and night—summer and winter—City Service, the gruelling test of stamina! In this service, the first Mack has rolled up 70,000 revenue-producing miles, with many more to come for the Connecticut Company.

And this is by no means remarkable for a Mack Bus. It is just a typical example of what transportation knowledge and long experience in design and manufacture can translate into bus performance. It is the kind of performance which gains the confidence of railway operators. It is the kind of performance that

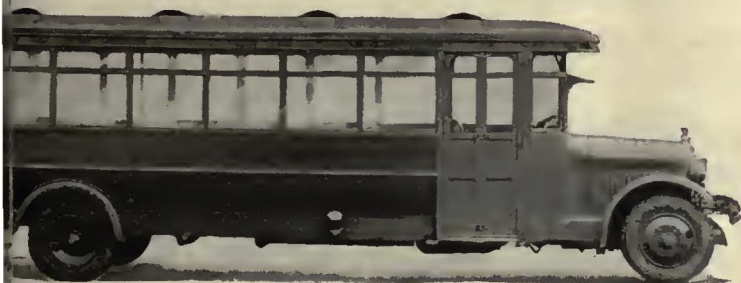
gives Mack the leadership in solving transit problems. It is the kind of performance that builds Mack fleets.

Service hours, hours on the road, passenger hours. These are Mack hours. Why? Because behind Mack buses is an organization with one objective—to produce a transportation unit in which is incorporated every feature of design and convenience for maximum earning capacity. In personnel, in engineering experience and in manufacturing facilities, Mack is geared to do this—for you.

The many exclusive features which build up revenue-producing mileage are explained in detail in the new Mack catalog No. 93. Write for a copy.

MACK TRUCKS, INC.
INTERNATIONAL MOTOR COMPANY
25 Broadway, New York City

Ninety-five direct MACK factory branches operate under the titles of: "MACK-INTERNATIONAL MOTOR TRUCK CORPORATION," "MACK MOTOR TRUCK COMPANY," and "MACK TRUCKS of CANADA, Ltd."



The **Mack** Bus

"OURS AVERAGE 20,000 MILES"



Goodyear-equipped bus of The Jefferson Highway Transportation Company, Minneapolis, Minn.

"We have been in the bus operation business going on eight years," writes Mr. Edgar F. Zelle, President of the Jefferson Highway Transportation Company, Minneapolis, Minn., "and now operate 25 buses, serving 35 municipalities.

"Since we started operating we have used every type of tire, and have now concentrated entirely on Goodyear Tires, due to the excellent service they have rendered and the low cost per mile.

"The tires average 20,000 miles, and we have one instance where a tire has traveled 63,000 miles.

"These are remarkable mileage figures, inasmuch as the buses travel every day throughout the year and over all sorts of roads."

* * *

Goodyear Bus Tires make records for long, economical, trouble-free mileage wherever they are used. The Goodyear Bus Tire line offers you the particular tire that is suited to your operating conditions.

For every Goodyear Cord Bus Tire there is an equally fine Goodyear Tube, built especially to the needs of bus service

GOODYEAR

Copyright 1926, by The Goodyear Tire & Rubber Co., Inc.

ALWAYS FOR PROGRESS!*"Modernize—Pneumatize!"*

This familiar slogan has characterized National Pneumatic advertising for many years.

The movement to bring railway rolling stock up to date is heartily endorsed by the National Pneumatic Company as an extension of its own long-standing policy.



NATIONAL PNEUMATIC EQUIPMENT for the modern car

**Treadle-operated exit doors**

One of the most progressive steps ever taken to simplify and economize traffic handling has been the widespread adoption of our treadle-operated exit doors. Particularly valuable in one-man trolley service, the automatic treadle door is also used to reduce platform expense and facilitate the operation of articulated units.

NATIONAL PNEUMATIC COMPANY*Executive Office, 50 Church Street, New York**General Works, Rahway, New Jersey*

CHICAGO
518 McCormick Building

MANUFACTURED IN
TORONTO, CANADA, BY

PHILADELPHIA
1010 Colonial Trust Building

Railway & Power Engineering Corp., Ltd.

*Miles of Smiles
for Rider
for Driver
for Owner*



Lang Bodies on the Road

You see them everywhere, their graceful lines blending along scenic highways or picking their way through city streets.

Framed in a background of mountainous country, desert sand or congested traffic, Lang Bodies are identified by their beauty of appearance and characteristic points of refinement that contribute to the personal comfort of passengers. And with beauty of line is combined strength of manufacture that *keeps* Lang Bodies on the road.

LANG
BODIES
*Miles of Smiles
for Rider for Driver for Owner*

DESIGNERS AND BUILDERS OF INDIVIDUALIZED BODIES
FOR THE BUS MANUFACTURING INDUSTRY.

THE LANG BODY COMPANY • CLEVELAND • O.



UNITED STATES BUS TIRES ARE GOOD TIRES

IF all the bus lines equipped with U.S. Royal Cord Bus-Truck Tires could be shown in one picture, most people would be surprised that there are so many buses in existence.

Take the illustration below as merely a small cross-section of such a picture. Note that bus lines from every part of the country are represented.

This is a graphic way of indicating the nation-wide

recognition of a U. S. Tire that was the first pneumatic specifically designed for bus service.

This pioneer in one of the greatest transportation developments of all time, is today a most dependable factor in the comfort, speed, safety and regularity of the modern motor coach.

The success of the U. S. Royal Cord Bus-Truck Tire is another triumph for those great inventions of U. S. Tire engineers—*Sprayed Rubber, Latex-treated Web Cord* and the *Flat Band Method* of building a tire.



United States  Rubber Company
Trade Mark



BATON ROUGE ELECTRIC CO. LOUISIANA

COLUMBUS ELECT AND POWER CO. GEORGIA

PHILADELPHIA & WESTCHESTER TRACTION CO. PENNSYLVANIA

MUNCIE, IND.

ROCHESTER, N.Y.

WARREN TRANSIT CO. NEWTON FALLS, OHIO

BEATRICE-LINCOLN BUS-LINE NEBRASKA

TENNESSEE TRANSIT CO. JOHNSON CITY, TENN.

EAST SIXTH ST. TRANS. CO. TULSA, OKLA.

WHITE STAGE LINE ST. PETERSBURG, FLA.

WHITE STAR LINE PORTO RICO

REO WORCESTER CO. WORCESTER, MASS.

TEXAS ELECTRIC RAILWAY CO.

GULF COAST MOTOR LINES FLORIDA

SHASTA TRANSIT CO. SACRAMENTO, CAL.

WHEELING ST. CLAIRVILLE & CAMBRIDGE TRANS. CO. OHIO

MIDWEST TRANS. CO. MINNEAPOLIS, MINN.

INTER-CITY BUS LINE ST. LOUIS, MO.

PIERCE ARROW SIGHT-SEEING CO. SALT LAKE CITY.

UTAH PARKS CO. UNION PACIFIC RWY. CO.

DETROIT STREET RAILWAYS CO. DETROIT, MICH.

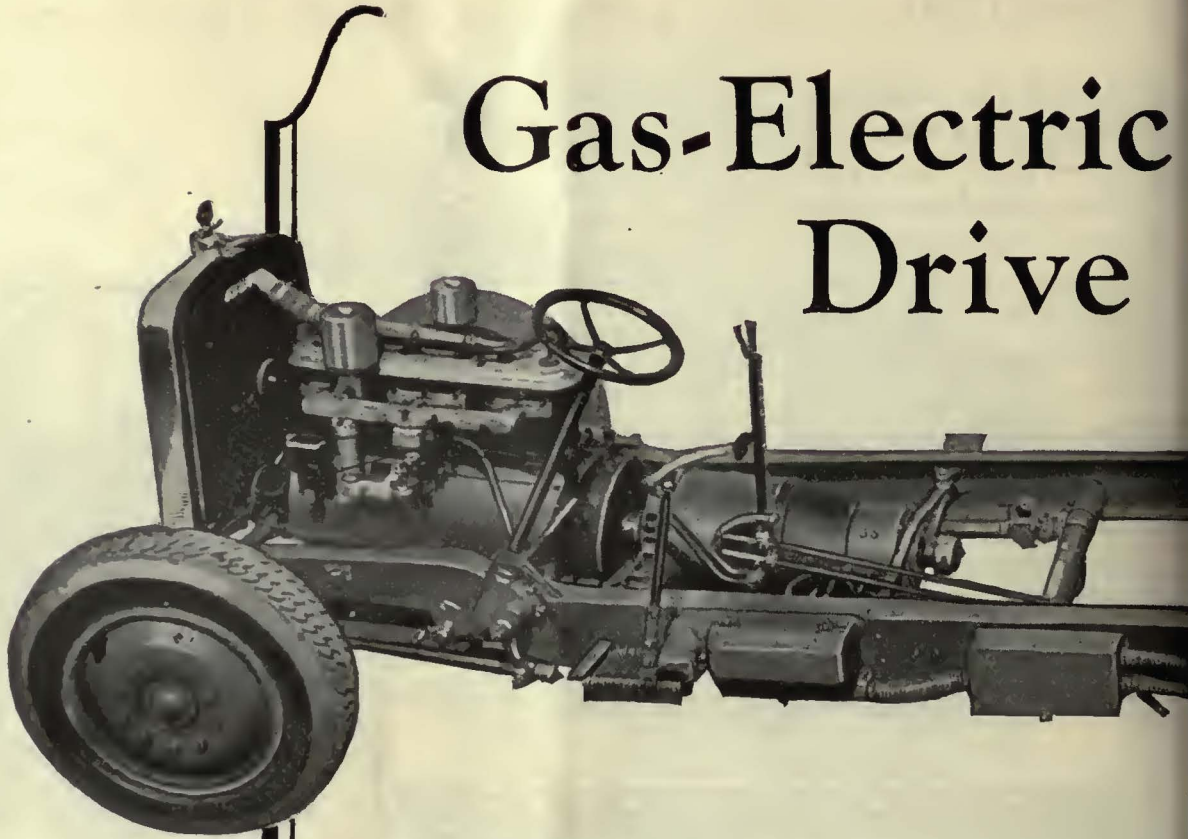
THE CONNECTICUT COMPANY NEW HAVEN, CONN.

PACIFIC ELECTRIC RAILWAYS Co. LOS ANGELES, CAL.

U.S. Royal Cord Bus-Truck Tires

Built of Latex-treated Web Cord

Gas-Electric Drive



It has enabled bus operators to increase their schedule speeds as much as 20%. This is because the acceleration of gas-electric buses is automatic, dependent upon the electric equipment, not upon the skill of the driver.

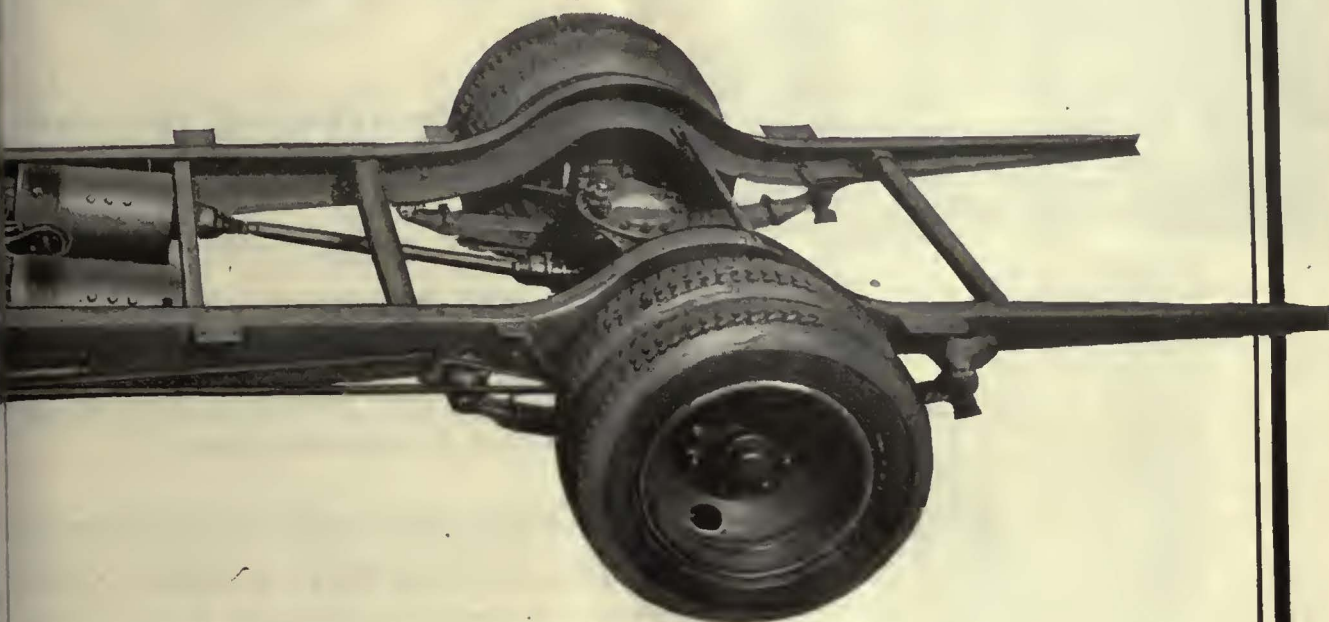


The name "General Electric" on bus equipment is a guarantee of reliable service. It means the same high degree of excellence in electrical equipment that has been recognized for years in other fields of transportation. Specify "General Electric" when you select the *drive* for your gas-electric buses.

GENERAL

GENERAL ELECTRIC COMPANY, SCHENECTADY, NEW YORK

The outstanding bus achievement of 1925



Interest in buses and automotive equipment in general is focused on this General Electric development—Gas-Electric Drive.

It is only a few months since the Philadelphia Rural Transit Company, acting upon its experience with a gas-electric bus in operation, placed its initial order for 215 buses equipped with G-E electric drive. In this short period the gas-electric bus has commanded the attention of students of transportation progress as no other single bus development has done.

Gas-electrics are already in operation in a half dozen other cities, representing all sections of the country.

No operator should make a final selection of bus equipment without first understanding the several important advantages of electric drive—listed below.

In Maintenance

Inspection and testing of engine are simplified, made systematic and conclusive.

Engine cannot be raced or stalled and average engine speed is lower—prolonging life of bearings, pistons, cams and all other moving parts.

Clutch, gears and differential—all subject to high maintenance—are eliminated.

Without the shock of gear changing, the life of engine, chassis and body is longer.

Uniform torque of electric drive means less tire wear.

Engine lubrication is materially less.

In Operation

Higher schedule speeds—through more rapid acceleration and reduction of driver fatigue—affording lower costs and higher receipts.

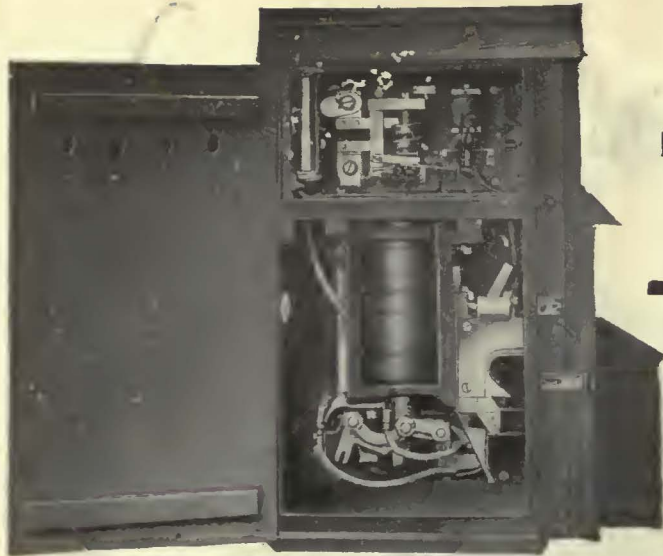
Greater riding comfort—no vibration or jerks during starting, and smooth acceleration.

Increased safety—control entirely in foot pedal relieves operator's hands for steering—skidding is minimized by individual drive on rear wheels—engine cannot stall on dangerous crossings.

11-77

ELECTRIC

SALES OFFICES IN ALL PRINCIPAL CITIES



100%

on your investment

Electric railways are getting this return from G-E Automatic Sectionalizing Switches. That is, the financial return realized the first year is at least equal to the cost of the switches.

Automatic Sectionalizing Switches return the scrap value of feeder copper they make unnecessary or save the cost of additional feeders that would otherwise be required.

In addition to this saving you can expect more reliable service, better schedule speeds and better car lighting, when Automatic Sectionalizing Switches isolate short circuits and improve trolley voltage conditions.

The application of these switches is an engineering problem. G-E engineers will co-operate in determining the adaptability of them to your distribution system.



GENERAL ELECTRIC

GENERAL ELECTRIC COMPANY, SCHENECTADY, N. Y., SALES OFFICES IN ALL LARGE CITIES

Electric Railway Journal

Consolidation of *Street Railway Journal* and *Electric Railway Review*

Published by McGraw-Hill Company, Inc.

MORRIS BUCK, *Managing Editor*

Volume 67

New York, Saturday, January 9, 1926

Number 2

Baltimore Valuation Case Is of Special Interest

REALIZATION that transportation cannot be sold at a fixed price but that the price must vary from time to time, depending upon the cost of production, has now come to the public. The courts have determined, moreover, that this price must include a fair return on the fair present value of the property, and that present-day reproduction cost cannot be ignored in the determination of present value. It would seem to follow that present value must change from time to time whenever there are important changes in the unit costs of the materials and labor that enter into the construction of the property. In consequence, the question of properly valuing railway properties is one of continuing interest to all transportation executives.

For these reasons, a rather full statement of the way in which the United Railways & Electric Company of Baltimore presented its recent valuation case to the Maryland Public Service Commission is published elsewhere in this issue. The Baltimore property is one of the largest in the country. It had not previously been valued by the commission. Its officers had the opportunity of preparing a valuation case in the light of the multitude of previous decisions in other valuation cases rendered both by commissions and courts, and in the light of the valuable contributions that have been made to the subject by economists and valuation engineers.

Transportation executives and valuation engineers should therefore be interested in the attitude which the company has taken toward such questions, among others, as the significance of original cost, the weight to be attached to present-day reproduction cost, the measurement of going value, and the treatment of depreciation.

In particular, the claim of the company that original cost may serve either one of two purposes and must be defined according to the purpose which it is to serve and the attempt of the company to make an analysis of going value and lay the foundation for a definite measurement of at least its minimum amount open up interesting fields of discussion.

A Valuable Lesson from the Bus Industry

PROBABLY no one will deny that manufacturers of buses, as well as independent bus operators, display remarkable ingenuity and enthusiasm in salesmanship. Seemingly insurmountable difficulties are overcome with apparent ease. No stone is left unturned to put across their product. Why not generate the same ingenuity and enthusiasm both on the part of car and equipment manufacturers and of railway operators?

There has been witnessed a most rapid development of the bus unit from a sort of modified truck to the luxuriously appointed coach of today. The bus manufacturer has bent every effort to interpret the composite

public demands, and he has produced a vehicle that appeals to the rider's sense of beauty and refinement.

The auto rider who was satisfied five years ago to ride in a leather-upholstered open touring car today requires a closed mohair-upholstered sedan with all the incidental comforts. He sees in the de luxe bus an appeal to the same desires as the private automobile produces.

It is generally agreed that there is urgent need today for the retirement of large numbers of electric cars of obsolete design. There also exists a demand for an electric car which is substantially lighter than any developed to date, a car which is graceful in exterior lines, has a pleasing interior and one in which the noise of gears and the rattle of brake rigging has been eliminated. Close co-operation between the several car and equipment manufacturers and large railway properties is essential to the successful development of such a vehicle. Radical changes in design of car equipment may be necessary.

Car manufacturers should take the initiative just as have the bus manufacturers and develop the transportation unit desired. A demand exists and it should be met.

Getting the Message Across to the General Public

SKILL in the presentation of electric railway publicity material is of greater importance than the selection of the subject matter. Discussion of this question at a recent convention showed how numerous and varied are the opinions of railway men concerning the most effective type of advertising. Such diversity of opinion makes it rather difficult at times for the individual manager to decide which type would be best in his particular case.

Numerous companies favor good will advertising that has no direct connection with railway operation. Others stress details of their own work, such as shop overhaul methods or provision of snow-fighting equipment. Statistics, particularly cost figures, are a usual type of publicity material. Posters describing points of interest reached by the railway are utilized frequently.

Certain companies employ all of these forms while others believe some of them to be of little value. Good results have been obtained by each of these methods, however, and it appears likely that the secret of success lies largely in the skill displayed in the execution. The public is bombarded with every sort of advertising. It would be impossible for any one person to read all that is offered. The average man reads only such of it as arouses his interest. Few will read dull and uninteresting railway publicity matter simply because they realize that the subject is one of importance.

On the other hand, if the thought is dressed up in an attractive manner people will read regardless of whether the subject concerns details of railway oper-

ating practice, matters of general community interest or inducements to visit local points of interest. To be really effective, however, publicity material must be honestly written. Bait that has no connection with the story to be told is bad because it makes the reader feel that he has been deceived. If the real subject of the advertising cannot be made interesting, it might better be dropped. When it can be made interesting, however, every effort should be used to make it so. The railway which fails to do this is neglecting a wonderful opportunity.

Storm Clouds Threaten the Province of Ontario

MORE somber than blue is the shade that seems to predominate the railway horizon in the Province of Ontario, Canada, with clouds portending uncertainty and change hovering over the cities of Hamilton, London and St. Thomas. Efforts are being made to bring order out of chaos in Hamilton with the railway continuing service under a temporary agreement, but a transportation deadlock exists in London and the demise of the railway in St. Thomas seems probable. An outline of the facts is essential to the interpretation of these events. In Hamilton the franchise expires in 1927. At the municipal election held on Dec. 7 voters opposed the purchase of the railway by the city, as well as the granting of a 25-year franchise to the company, although they had been warned that something would have to be done if service were to be continued. The defeat came as a great surprise. Now further negotiations are in order and another agreement is likely to go before the voters.

The franchise in London expired not long ago and was automatically renewed for five years, but the city neglected to serve notice of its intent to purchase. The fares fixed by the London by-law are seven and nine tickets for a quarter. With the approval of the Legislature a 5-cent fare was charged for a year or so and the company continued to exact this charge until the Ontario Railway Board ordered the railway on Dec. 12 to revert to the old scale. The company followed with an ultimatum announcing withdrawal. In the emergency an agreement was reached whereby the Council granted the right to charge a 5-cent fare for a period of 60 days. This the company favored, with the proviso that after the first of the year buses and jitneys competing with the railway should be banned. The Council refused this request and the company withdrew its service. In this city, as in Hamilton, the generosity of the railway averted suspension during the holidays.

On the very day on which Hamilton voters vetoed both railway propositions residents of St. Thomas approved the plan to discontinue the railway and award operating rights to a bus company. This line, about 6 miles, will probably cease operating about March 1.

It is to be hoped that there will be a speedy adjustment of affairs and that the agreements in prospect will work to the mutual advantage of the patrons and the companies. Not so long ago another city of Ontario, St. Catharines, began a year under the auspicious occasion of a new franchise protecting the railway from bus competition. Let the new year result in contentment instead of conflict in the entire Province of Ontario. Interesting to outsiders it is that in the discussion in connection with all these cases the voice for municipal ownership is a thin, small one in a province previously noted for its pronounced sentiments of this kind.

The Wonder City of Florida Relies on the Electric Railway

CORAL GABLES, down in Florida, is a high-grade development in every sense of the word. To that end no stone has been left unturned. Here is an ideal community, ideally conceived, ideally planned and being ideally carried out. It has 150 miles of wide, paved streets, plenty of space for parking, excellent conditions for the use of the bus, the taxi and the private auto. But the promoters see a town destined to grow and they realize that growth is dependent on adequate transportation facilities, which are not complete without the electric railway.

Its promoters do not aspire to make a metropolis of Coral Gables. They are content that others shall strive for such honors. They have set out deliberately to make of it a model home community by imposing housing restrictions of the severest kind. As a means to this end of building up an ideal community—and an important means—they have installed an electric railway modern not only in respect to cars, but from track to its very trolley wire. The road makes its appeal to every member of the family. It is intended to be used by every member of the family. The dignity of the most presuming resident of Coral Gables will not suffer a jot in using the road. Not until every member of the family has an automobile will he be a free agent—a degree of the use of the auto that is not only inconceivable but physically impossible.

In the enthusiasm over the magnificence of the type of rolling stock to be used in that city the significance of the installation of the electric railway has not received, even among electric railway men, the attention it deserves. What a tribute that installation is to the essentiality of the trolley in community planning! Looked at rightly, it is one of the most potent arguments in behalf of the industry possible to conceive. Towns and cities elsewhere of modest and even of assuming proportions that are inclined to look down upon the electric railway will do well to ponder the lesson of Coral Gables.

Not every community has the possibilities for future growth that is inherent at Coral Gables; not many communities can hope to approximate it in civic consciousness and in salubrious surroundings. But there is not a community anywhere that can afford to ignore the significance of the value to it that Coral Gables has placed on the electric railway as a means of steady, dependable transportation.

New Cars and Better Service Attract Paying Traffic

A ROAD purchased from a receiver has been made to pay a good return because of the use of modern cars and the introduction of better service. Within a year, the reduction in operating expenses per car-mile was 27.3 per cent, and during the same period the operating expenses fell from 97.4 per cent to 77.7 per cent of the gross revenue. At the same time the average revenue per passenger increased 31.1 per cent, and every month, as compared with the corresponding month of the previous year, showed an increase in gross revenue and a decrease in operating expenses.

This is the record during 1925 of an interurban railway between Buffalo and Erie, which has to meet severe steam railroad competition and is in a region famous for its well-paved highways.

The reasons for the success of this interurban road may be summed up briefly. They were to provide comfort and speed in travel with economical operation. To supply the latter, light one-man cars were adopted. To furnish the former, the new cars were equipped with high-speed motors, modern trucks, as comfortable seats as the most luxurious automobile, and other equipment adapted to attract the through rider. The result is that the private automobile cannot compete in time or in comfort with the electric car, any more than it can on the cost of the ride.

Some people have affected to believe that the general use of the private automobile has seriously narrowed the field of the interurban car. If this is true it must be because the automobile can provide in greater measure than the car most of the objects sought by the passenger other than cost, because the cost to the passenger of riding by automobile is considerably more than that by trolley car. If these points of superiority of the automobile are analyzed, they will be found usually to be speed and luxury of travel. If the trolley car can be made superior to the private automobile in these two matters, it should win much of the business now carried by the latter.

Altogether, the history of the rehabilitation of the Buffalo & Erie Railway is a most encouraging one to owners of other interurban lines. The company claims that its service is "the last word in comfort, speed and safety" of travel, and this is the bid which it makes for patronage. That proper equipment and service which meets the modern transportation demand will win success for the interurban is emphatically demonstrated by the experience, which has been cited, of the Buffalo & Erie Railway.

Selling Rides to the Public of Atlanta

MAKE them want to ride! This is what the Georgia Railway & Power Company, Atlanta, is doing in a series of appeals that it is making to the public. So much is this so that the company was recently aided and abetted in its work by none other than Fuzzy Woodruff. This is indeed an achievement. Fuzzy is a local newspaper man with a roving commission. Office hours and time clocks mean nothing to him. His is a job in newspaper work that many covet but few achieve. Fuzzy is in the class with Bugs Baer, Moulton, O'Hara and others. It is a charmed circle. These rare spirits touch what they write with art. Their product stands out resplendent like Mars at perihelion. If you appear to them to be a subject for copy they turn their attention to you. It is up to you to be on your guard. They down dignity with a single sentence—where dignity and humbug travel under the same hat.

Well, Fuzzy, beguiled by the railway's appeal, turned his attention recently to the new Atlanta double-deck buses. Fuzzy forgot himself. He rode and rode and rode. Sam Weller and Pickwick in the spirit were with Fuzzy on this ride. And when he got home to a cold supper he found his wife had been doing the same thing—riding the top of one of the new buses. Both had fallen before the spell of the appeal of the signs in the street cars that proclaimed the complete glory of a red and golden autumn to be seen in Ansley Park atop of one of the new buses. It was a great afternoon for Fuzzy. But it was a greater one for the Georgia Railway &

Power Company, for Fuzzy put his experiences into print. It is the rage in Atlanta to read Fuzzy. For the benefit of those who may have missed the article in the original the railway reprinted Fuzzy's story in *Two Bells*. Not everybody runs double-deck buses that are sightseers. Not every city harbors a Woodruff. It was a deft hand that induced Fuzzy to ride. And it was, indeed, a deft hand that recorded the experience. A deft hand can always be counted upon to attribute strange attractions to the more or less commonplace and invest it with a necromancy that will live with it for a long time. It's the way it's done that counts.

Kansas City About Ready for a New Start

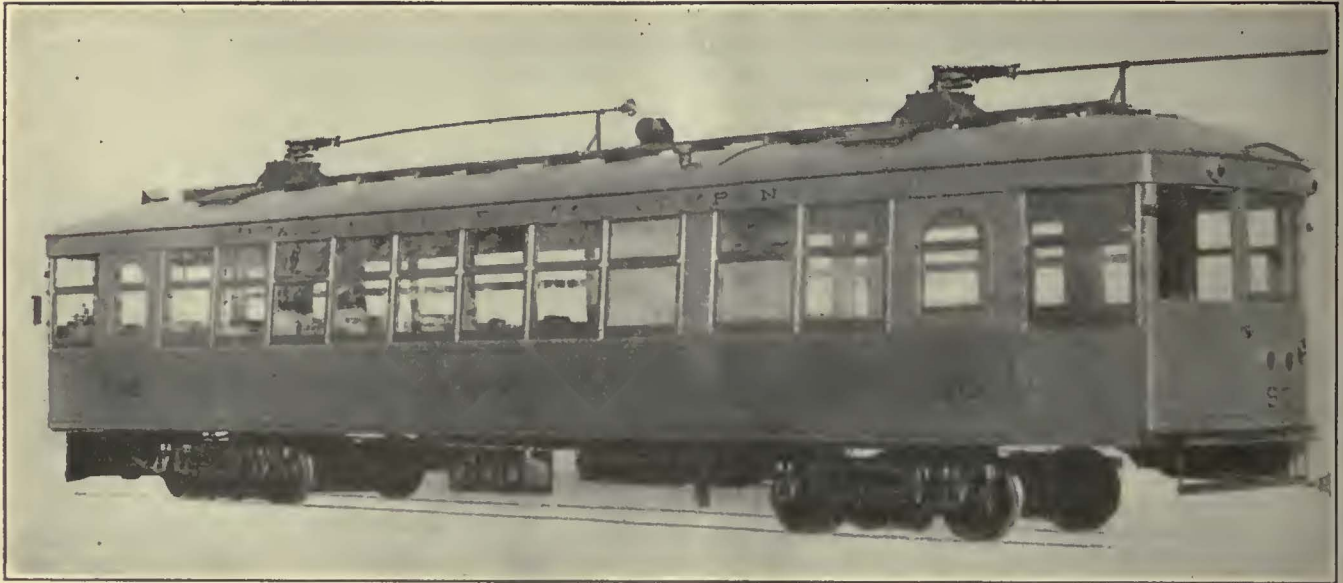
PROSPECTS appear to be good for lifting the receivership of the Kansas City Railways. On Jan. 4, under foreclosure, the properties passed to representatives of the holders of the first mortgage bonds. All other holders are eliminated unless the first mortgage holders agree to extend some measure of recognition to them or the courts rule that there are valid reasons for recognizing their contentions. There are some rumblings in behalf of these last-mentioned holders, to be aired publicly, it is expected, when the sale comes up for confirmation. Certainly the reorganization is drastic so far as it relates to the changes brought about in the capital structure. As a result fixed charges are pruned from \$2,057,600 to \$747,912. Net earnings during the receivership have been \$1,814,178 in 1921; \$2,135,858 in 1922; \$2,203,353 in 1923; \$1,730,475 in 1924 and were \$1,336,816 for nine months of 1925.

Interest here, however, is neither with the technical question of the respective rights of the different holders nor with the details of the basis of the security exchange, a matter treated in the JOURNAL for June 6, 1925. It is with the prospects for the future. They appear to be very bright. Not only has the property been well maintained, but a cash fund of about \$4,000,000 has been accumulated. This, it is said, will be used for extensions and improvements, presumably to be made under the direction of the personnel that has done so well with the property since the receivership on Sept. 9, 1920. That this management has kept up to date is exemplified by the extent to which it has co-ordinated bus operation with the railway with 10-cent fares on local bus routes and 25-cent fares on express routes. This was an accomplishment difficult to achieve with the property in the hands of the court, but it was achieved, and it presages well for the future. As for the franchise terms under which the company operates, they are, perhaps, not ideal in every respect, but the grant was made in 1914 and runs to 1944 with operation under modified service at cost.

F. G. Buffe, manager for the receivers, is a keen observer of events. He has publicly said that "the American people are spoiled darlings of invention and civilization," but he has also said that "we have until recently been trying to sell transportation in old run-down cars to critical, exacting people, and the result has been that many of our customers have left us." All of his acts reflect as his sentiment, and the sentiment of the organization of which he is a part, the modern doctrine "get the gross up and then take care of it."

Attractive Cars Put Buffalo & Erie Railway on Paying Basis

This Road, Which Was a Losing Venture for Sixteen Years, Is Rapidly Recovering with the Aid of Light-Weight, One-Man, High-Speed Cars Designed to Attract Passengers and Reduce Operating Costs



The Car That Caused the Change

WHILE today the Buffalo & Erie Railway is well on the road to an attractive earning basis, approximately a year ago this 92-mile interurban line running interstate between the terminal cities from which it takes its name was purchased out of bankruptcy. From the day the line was completed in 1909 it was a losing venture and for nine years previous to the recent purchase it had been in the hands of a receiver. Several times during this period the property was close to total abandonment due to failure to earn actual operating expenses.

The methods by which the new management has brought this property from such a hopeless outlook to a position that has built up a spirit of aggressive optimism in its employees and enthusiastic commendation on the part of the communities served make an inspiring record. That this has been accomplished in less than a year makes the situation even more interesting and significant to the entire industry.

The results accomplished are attributed by the management largely to the acquisition of light-weight cars designed carefully in every detail from the standpoint of rendering the utmost in service and attraction to passengers, while at the same time making possible very substantial reductions in operating costs. With this equipment, in the hands of a management alive to the necessity of building traffic by modern merchandising methods, the income of the property has been increased in the face of a severe commercial and industrial depression locally. At the same time, a large reduction in operating expenses has left a net revenue that bids fair to increase steadily.

Light-weight one-man interurban equipment has more than demonstrated its practicability and safety on a comparatively long run under severe competitive conditions. Two high-grade steam railroads, one of which is the main line of the New York Central, run between the terminal cities. In addition, a paved highway offers an attractive route for automotive vehicles. But the new cars, described in detail in the Aug. 8 issue of ELECTRIC RAILWAY JOURNAL, were designed with such careful attention to meeting these requirements that

TABLE I—COMPARATIVE OPERATING STATISTICS, BUFFALO & ERIE RAILWAY

For ten months ended Oct. 31, 1925, under new one-man cars versus corresponding period last year with old two-man operation

Service	Per Cent Increase or Decrease (D)
Car-miles.....	16.7
Car-hours.....	6.5
Speed in miles per hour.....	9.2
Passengers carried.....	14.7 (D)
Seat-miles.....	33.4
Receipts per passenger.....	31.1

PER CENT OF GROSS REVENUE

	Ten Months 1925	Ten Months 1924	Decrease	Per Cent Decrease
Operating Expenses				
Maintenance.....	13.6	21.2	7.6	35.8
Power.....	8.8	12.8	4.0	31.3
Conducting transportation.....	28.8	36.2	7.4	20.4
Other operating expense.....	26.5	27.2	0.7	2.6
Total operating expense.....	77.7	97.4	19.7	20.2

PASSENGER REVENUE AND COST PER CAR-MILE

	1925	1924	Change	Per Cent Change
Revenue, cents per car-mile.....	34.0	36.5	2.5	6.8
Expense, cents per car-mile.....	28.1	38.7	10.6	27.3
Revenue per passenger, cents.....	37.9	28.9	9.0*	31.1*

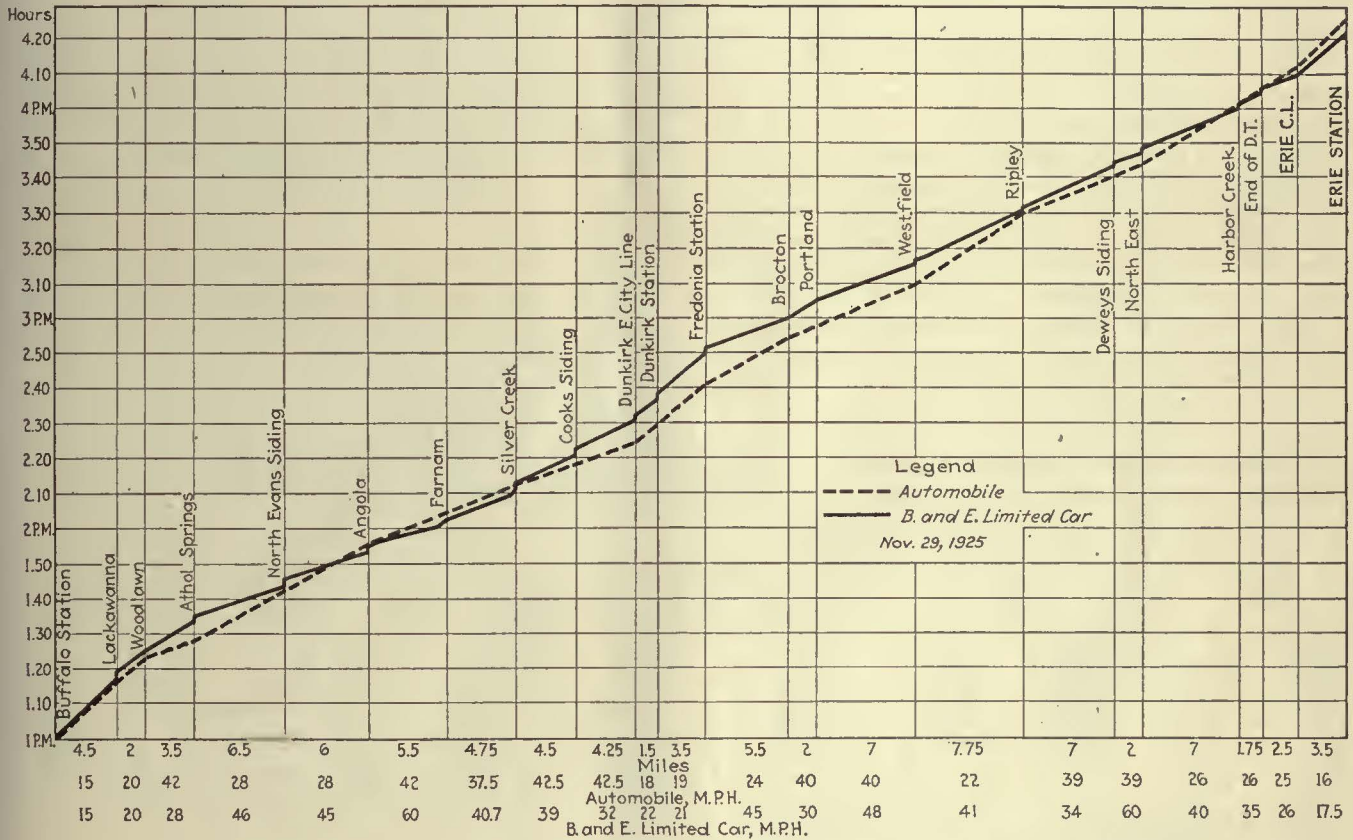
*Increase.

profitable performance seems assured despite the unusually severe conditions encountered.

When the International Utilities Corporation, owner of this property under the direction of the Chandler Management Corporation, installed the new cars less than a year ago, the road quickly began to take on new life. The new owner in the rehabilitation of the Kentucky Traction & Terminal Company at Lexington, Ky., had previously demonstrated the efficacy of light-weight one-man interurban cars in fighting rising operating costs and automotive competition. When the Buffalo & Erie property was acquired, it was decided that the type of equipment operated was the key to both increased patronage and reduced cost.

With a management alert to the comfort and convenience of the traveling public, the confidence of the communities along the line was won by outright frankness and performance. At first, an antagonistic attitude by the employees and dubiousness on the part of the public was encountered. After less than a year of

results, the general industrial and business conditions in the territory served should be taken into consideration. Starting about the time the new cars were put in service, the entire region experienced one of the most severe business depressions in its history. A large volume of regular industrial travel was temporarily lost due to the shutting down of industrial plants on the line. The gains shown in Table I represent, therefore, transient business and former automobile riders that have been attracted by the new service. This statement is borne out by the statement that although the total number of passengers carried has decreased 14.7 per cent for a ten-month period in comparison with 1924, there is a much larger proportion of through riding because of the improved service. As a result, the average receipts per passenger have increased for the ten months of 1925, in comparison with the corresponding period of the previous year, by 31.1 per cent. The better service is also shown by the greater increase of car-miles than of car-hours.



Speed Time Curve of a Limited Electric Car and of a Private Automobile Between Buffalo and Erie

The automobile, a six-cylinder Buick, made a no-stop run between the termini and was driven at as high a speed as possible consistent with safety and the speed

laws. The trolley car made eighteen city and village stops and carried a total of 82 passengers, yet made the run in four minutes less time than the automobile and in

its regular schedule time. Where service like this is given by an electric railway, there is not much danger of competition by automobiles or buses.

operation with the new equipment, this condition has been reversed. The results accomplished are clearly shown by some of the operating results.

STATISTICS TELL THE STORY

Up to Dec. 31, 1924, the road was being operated with the old, heavy two-man cars. In October, 1925, the new equipment had been in service for ten months. The comparisons in Tables I and II are between the ten months of operation ended Oct. 31, 1925, with the new equipment, and the corresponding ten months of 1924, when the old cars were still in service.

When these figures are considered in analyzing the

While the growth in revenue was obtained under the adverse business conditions mentioned, operating costs were at the same time sharply reduced. Comparing the ten months of 1925 with the similar period of 1924 maintenance expense was reduced from 21.2 per cent of gross revenue to 13.6 per cent of gross revenue, or a reduction of 7.6 per cent of the gross. Power expense was reduced from 12.8 per cent to 8.8 per cent of gross revenue, or a reduction of 4 per cent of gross revenue. Expense of conducting transportation was reduced from 36.2 per cent to 28.8 per cent of gross revenue, or 7.4 per cent less. Total operating expense was reduced 19.7 per cent of gross revenue. The significance of this



The Buffalo & Erie Railway Has Built Up a Profitable Business by Giving High-Speed Service Between Buffalo & Erie with Modern Light-Weight One-Man Cars. This View Shows a Bridge Over Cattaraugus Creek at Irving, N. Y.

result is readily apparent when it is noted that the 19.7 per cent reduction for the ten-month period brought operating expenses down from 97.4 per cent of gross revenue to 77.7 per cent.

The actual operating figures are given in Table II.

Out of a total of eighteen cars operated, six limited cars take in 38 per cent of the gross passenger receipts. The actual average revenue per car-mile for the ten months of 1925 was 34 cents as compared with 36.5 cents in 1924. The expense per car-mile was 28.1 cents in 1925 and 38.7 cents for the same period the previous year. The average energy consumption for the limited cars during October, 1925, was 1.96 kw.-hr. per car-mile. For the local cars it was 2.25 kw.-hr. per car-mile.

All this has been accomplished despite the substantial improvement in service that is also shown by the

figures. Comparing the ten months of 1925, car-miles were increased 16.7 per cent, schedule speed 9.2 per cent, and seat-miles 33.4 per cent. In all the comparisons for the ten-month period, it must be remembered that operation of the new equipment did not get into full swing for 30 to 60 days after it was first put in service.

LINE NOT PROFITABLE WITH HEAVY EQUIPMENT

To visualize what the improvement in equipment and methods have accomplished, a brief history of the property is interesting. Although various short sections of line had been operated for some years between Fredonia and Erie, the entire road was not completed until the section from Buffalo to Fredonia was built in 1909. From the very first, the enterprise was unprofitable and for about two years hourly service was maintained at

TABLE II—OPERATING STATISTICS, COMBINED PASSENGER AND FREIGHT DEPARTMENTS, BUFFALO & ERIE RAILWAY
For ten months ended Oct. 31, 1925, under new one-man cars versus corresponding period last year with old two-man operation

	Gross Revenue				Operating Expenses and Taxes				Net Income	
	1925	1924	Increase	Per Cent	1925	1924	Decrease	Per Cent	1925	1924
January.....	\$58,728.70	\$55,512.54	\$3,216.16	6.3	\$49,546.12	\$55,568.21	\$6,022.09	10.8	\$9,182.58	\$55.67*
February.....	36,661.30	55,259.96	1,401.34	3.6	45,915.43	52,346.43	6,431.00	12.2	10,745.87	2,913.53
March.....	57,272.36	56,985.83	286.53	.5	48,977.14	53,655.36	4,678.22	8.7	8,295.22	3,330.47
April.....	36,676.18	52,337.15	4,339.03	8.8	44,563.32	49,883.82	5,320.50	10.6	12,112.86	2,453.33
May.....	38,076.68	53,734.63	4,342.05	8.6	45,652.54	52,122.39	6,469.85	12.4	12,424.14	1,612.24
June.....	55,616.34	49,690.75	5,925.59	12.5	43,741.14	56,288.23	12,547.09	22.2	11,875.20	6,597.48
July.....	61,638.19	56,348.06	5,290.13	9.9	44,613.07	53,852.28	9,239.21	17.1	17,025.12	2,495.78
August.....	66,605.21	61,995.28	4,609.93	7.9	47,070.89	54,144.46	7,073.57	13.0	19,534.32	7,850.82
September.....	59,498.60	51,432.83	8,065.77	16.2	44,683.92	49,814.02	5,130.10	10.2	14,814.68	1,618.81
October.....	53,604.65	50,464.50	3,140.15	6.2	38,590.22	51,750.44	13,160.22	26.4	15,014.43	1,285.94*
	\$584,378.21	\$543,761.53	\$40,616.68	7.5	\$453,353.79	\$529,425.64	\$76,071.85	14.4	\$131,024.42	\$14,335.89

* Deficit.



Here Are Two Substantial Way Stations Along the Line of Route, One at Silver Creek, the Other at Westfield. Both Have Accommodations for Freight as Well as Passengers

a loss. The equipment consisted of cars weighing 40 tons, four to six years old, that had been in service on the section from Fredonia to Erie. In 1909 eight double-truck cars, weighing approximately 38 tons and seating 56 passengers, were purchased. Two additional lots of cars, totaling nine, were added by 1913. These were all comparatively heavy two-man cars. It was found that the multiple-unit control with which the cars were equipped was not suited to the frequent stop service between Fredonia and Erie. Consequently, the old cars were kept on the division west of Fredonia and the new equipment was operated between that point and Buffalo. Through passengers were required to make a transfer.

Upon completion of the line east of Fredonia, the distance from Buffalo to Erie was 92.5 miles. The scheduled time was four hours and 40 minutes. On the division west of Fredonia there were 173 stops in a distance of 46 miles. Between Fredonia and Buffalo there were 47 stops in an equal distance. Of the total line between Buffalo and Erie, approximately 82.5 miles is single track and 10 miles is double track. Approximately 16 miles of the line is in paved streets. Under the old operating conditions, one limited run was made each morning between Erie and Buffalo without a transfer at Fredonia. This was made in three hours and fifteen minutes, with a total of twelve stops.

The line continued unprofitable, and on Aug. 7, 1915, became insolvent. Receiver's certificates were issued from time to time to make improvements and to maintain service. Seven new 33-ton steel cars, seating 63 passengers, were purchased, and seven of the old cars built earlier than 1909 were retired. Expenditures for other physical improvements and even for operating expenses were held to a minimum. With the advent of the automobile, however, the road barely held its former volume of traffic. Most of this consisted of local necessity riding. There was little through traffic between Buffalo and Erie, and in fact few passengers for distances above 30 miles.

As the use of automobiles increased, the road seemed doomed. This was the condition when Chandler Management Corporation, assured by its experience with light-weight equipment on the lines in Lexington of the Kentucky Traction & Terminal Company, decided that the line could be made to pay and purchased it. The corporation immediately ordered fourteen new light-weight interurban cars from the Cincinnati Car Company, designed for high speed and one-man operation. Four single-truck Lexington safety cars and two snow plows were also added. The entire passenger operation was put on a one-man basis.

NEW CARS AND BETTER SERVICE DO THE TRICK

From the very beginning, the new management was convinced that a high average speed was essential to winning the volume of riding that would make the road profitable. At the same time, the comparatively long run required a car which would appeal to passengers from the standpoint of comfort and ease of riding. Every detail of the new cars was carefully worked out with these two objectives in mind. Attention was directed to making the cars pleasing in appearance both inside and outside. Exposed equipment on the interior was eliminated as far as possible. An effort was also made to minimize noise. Seat design was carefully studied and the cars were finally equipped with a combination of individual chairs and plush upholstered cross-seats



Although One-Man Operation Is Used, These 58 Passengers Were Loaded and Fares Collected from Those Without Tickets in One Minute 23 Seconds

in which many details that would afford comfort and relaxation to passengers were included.

It was decided that the degree of passenger comfort is due to a combination of many items, which, although apparently of minor importance in themselves, all go to affect the senses of touch, sight or hearing in either a pleasing or displeasing way, depending on the care with which the complete car is worked out. An unobstructed view is provided at the front end by setting plate glass directly into the vestibule posts without sash. At the same time a similar arrangement at the rear end of the car makes an observation compartment of the smoking room. Gutters have been installed along the eaves at the sides of the roof to keep water from dripping down on the side windows. Cork side lining, salamander roof and double floors have been used to deaden noises and drumming in the interior. The smoking compartment, already mentioned, is fitted with seats as comfortable and upholstered with the same material as those in the main compartment. The heaters in this smoking compartment are under separate thermostatic control from those in the main compartment, so that in winter either can be kept at a comfortable temperature irrespective of the other.

Buffalo & Erie Railway

Limited Service
every 2 hours
on the odd hour

Local Service
every 2 hours
on the even hour

**\$3.65 Round Trip
TO ERIE**
3 HRS & 10 MIN

50 CLINTON ST.
AT ELLICOTT

ANGOLA - SILVER CREEK
DUNKIRK - FREDONIA
WESTFIELD - CHAUTAUQUA LAKE
JAMESTOWN - NORTHEAST

The Buffalo & Erie Railway Uses Electric Signs at the Terminal Cites to Advertise Its Service. This Sign Is in the Heart of the Business District in Buffalo and Measures Approximately 20 Ft. x 30 Ft. Two Similar Signs Are at Erie

A special type of high-speed truck, designed and built by the Cincinnati Car Company, gives the new equipment a riding ease at high speed over only fair track superior to that obtained on many cars of much greater weight operating on heavier and better track.

The new cars have a free running speed of 56 m.p.h. To maintain a high schedule speed, unnecessary stops and delays were eliminated and the time of meeting stops and calls to the dispatcher was cut to a minimum. All stub end passing sidings for use by regular trains have been eliminated. With this end in view, Nachod block signals were installed over the entire line. The schedule speed was raised to 29 m.p.h. between terminals. This includes the running time inside the cities of Erie and Buffalo, as well as the smaller cities along the line. The average speed outside the limits of the terminal cities is 36 m.p.h. Limited service is given every two hours in each direction between 7 a.m. and 5 p.m. Local cars are operated between the limits, so as to give a car in each direction every hour. Night trains run on local schedule after 5 p.m. and up to 11 p.m. Total time between terminals is three hours and twenty minutes for limited cars and three hours and 35 minutes for locals.

CAR SERVICE FASTER THAN THAT BY AUTO

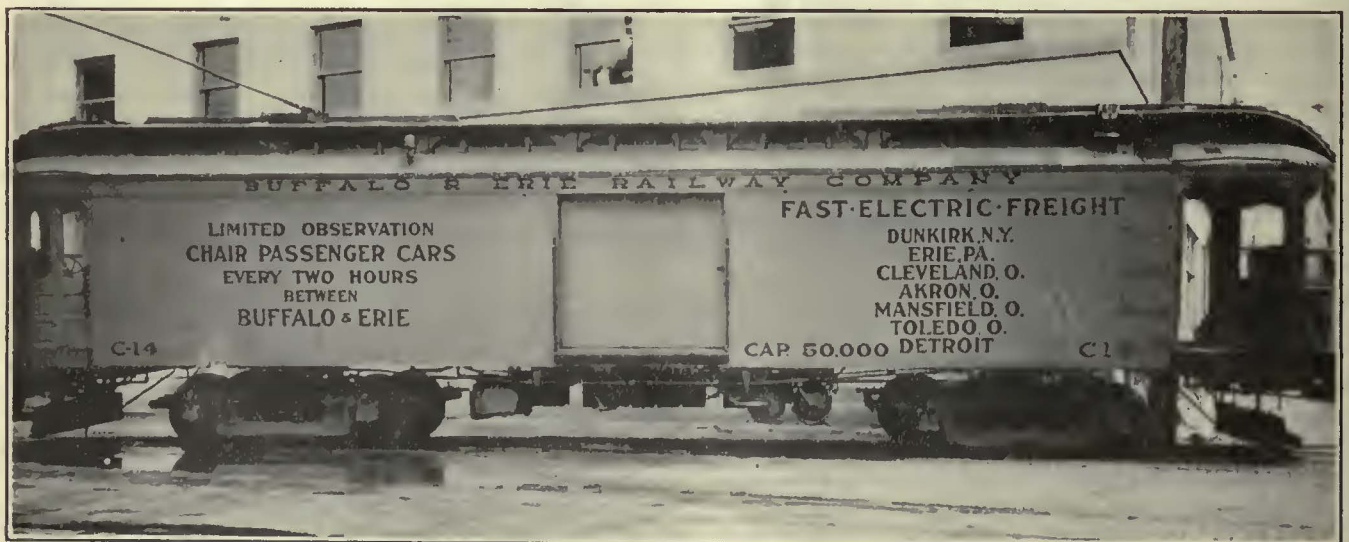
The time made by the limited cars is just as good or better than that which could be made by an individual non-stop automobile. It was realized that such speed was necessary to compete with the private cars, in view of the excellent highways which practically parallel the route.

A comparison between the two services is given by

than would be possible in the summer when the roads were congested or even with a normally clear road, if stops were made to pick up passengers as would be the case with a bus.

The run of the limited car shown on the chart was made in the schedule time of three hours and twenty minutes or four minutes less than the automobile. It was not a non-stop run, like that of the automobile, but included eighteen city and village stops for passengers. The number of passengers carried on the run was 82. The railway run might have been made in considerably less time, but it is scheduled with some leeway, so that the car can make the schedule daily with whatever passenger traffic it may have and regardless of normal weather conditions. Thus, on Nov. 25 last, the day before Thanksgiving, with twenty trains out of Buffalo and an average of approximately 30 passengers per train, and a large amount of local traffic, all the cars were practically on time.

As shown by the speed time chart, the time of loading and unloading is not great, although only one operator is used per car. One of the accompanying engravings shows a group of waiting passengers taken at 4:05 p.m., Oct. 29, in Fredonia, when 58 passengers boarded the westbound car, yet from the time when the door was opened until the last passenger was on the car and the door closed was one minute and 23 seconds, with all fares collected. Of course, after a passenger is on the car and has paid his fare, he is not disturbed by a conductor coming through the car collecting fares. Having the passenger leave and board the car under the direct observation of the operator saves time over the practice of having the starting



Each Freight Car Carries a Slogan to Advertise the Service

the speed-time run shown in the chart on page 59, in which the solid line shows the run of a limited car of the Buffalo & Erie Railway and the dotted line a non-stop run from Buffalo to Erie by a large six-cylinder Buick automobile driven as fast as safety and the speed laws of the villages would permit. The day was bright, clear and crisp, well adapted to the making of high speed by the automobile, and it was driven at a period of the day when highway traffic was the lightest. At times it ran as high as 50 m.p.h. and generally between villages an average speed of 42½ m.p.h. was attained. The result was that the run was made in three hours and 24 minutes, a time which is very much shorter, of course,

signal given by a conductor who may be in the center of the car collecting fares. That this principle, well known in city service, has proved to be equally true in interurban service is worth accentuating. It should be said, however, in connection with the speed of loading, that on the Buffalo & Erie Railway the fares paid by ticket average 67.1 per cent of the total fares collected.

PUBLIC SUPPORT GAINED

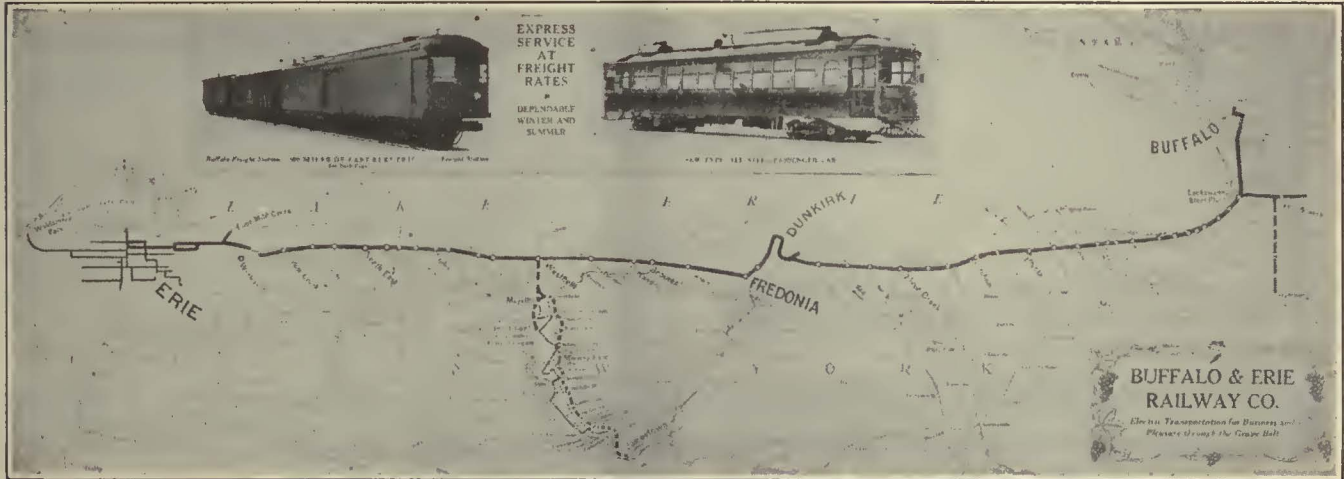
As the railway had been run with a crew of two men per car for a long time, the suggestion that one-man operation be employed caused some opposition at first, both on the part of the employees and the

public. This was quickly overcome, however, by actually demonstrated performance and by the many attractive features of the cars. The safety of one-man operation was likewise demonstrated to the satisfaction of both employees and passengers. Support of the public was won in meetings of the Chambers of Commerce and other civic bodies in the communities along the line. The purposes and objects of the new management were carefully and frankly outlined. It was clearly shown that this in the last analysis would lead to improved service.

An advertising and traffic building campaign was started. Billboards, local newspapers, circulars, fold-

and good for 45 days are sold at the rate of 1.8 cents per mile. Special school tickets are sold on a basis that is less than 1 cent per mile.

Both tickets and cash fares are collected by the operator of the car without difficulty. The McDonald duplex system is used for cash fares. A passenger entering the car with a ticket presents it to the operator, who immediately cancels the ticket by punching it. Upon leaving the car, the passenger surrenders this ticket to the operator, who can at a glance see if the passenger has ridden beyond the station shown on the ticket. A cash fare passenger, when boarding, secures from the operator a duplex receipt, which is returned



This Map Shows the Route of the Buffalo & Erie Railway, with Electric Railway Connections and Parallel Steam Railroads. The Buffalo & Erie Railway Is Shown by the Heavy Solid Line

ers, blotters and car cards were employed. A large flashing electric sign is maintained in Buffalo in the heart of the business district on Main Street across from Lafayette Square. The sign is approximately 20 ft. x 30 ft. and is visible for a considerable distance at night. A reproduction of this sign is shown on page 61. Two very similar signs, but 27x34 ft., are carried in Erie. All three signs have a running border of 10-watt green lights. The arrow is made up of 15-watt green lights, with ten-second flashes, and the large white lamp in the center is 250 watts. In addition, the sign is illuminated with large goosenecks hanging over the top, with floodlights below the bottom of the sign. The signs have a white background. Where the lettering shows black in the engraving, the letters are really red, the lighter letters being dark blue. The chair is an olive green, and the girl wears a yellow dress with a white collar, white hat and white gloves.

The effort to back up these claims of speed, comfort, convenience and necessity with performance, as declared by the signs and other advertisements of the company, has met with general recognition by the public and press in the territory served. Many favorable notices have appeared in the papers on the transformation in the line.

FARES AND FARE COLLECTION

The base fare for a single ride is at the rate of 3.6 cents per mile. Special excursion tickets are sold for feature events on a 2.5 cents per mile basis. Excursion round trip tickets to the terminal cities at either end are sold from any agency station at the rate of 2 cents per mile. Commutation books containing 54 rides

to him on leaving the car. The operator can see if the passenger has ridden beyond the station punched on the duplex receipt.

The operator makes out one daily trip report for each day's service, which gives the following information:

- Number of trips made, whether on local or limited trains.
- Station from and to which the operator is running.
- Time of running.
- Number of duplex tickets issued on each trip.
- Number of kilowatt-hours consumed on each trip.
- Number of hours worked each day.

At the end of each trip, the operator places in an envelope all of his duplex stubs, duplex tickets, and receipts collected.

The stubs and the duplex tickets are audited to determine if the operator has turned in the amount of cash as shown by his trip report and as certified by the station receiver. The number of fares collected between different points is determined by an audit of the tickets and duplex stubs as taken from the operator's envelope.

FREIGHT SERVICE

Besides the passenger service, the Buffalo & Erie Railway has developed quite an electric freight service. On Nov. 1, 1925, through traffic arrangements were made with the Cleveland, Zanesville & Eastern Railroad, by which its freight service is extended west of Erie to Conneaut, Ashtabula and Cleveland. The connection between Erie and Ashtabula is by means of a trucking service operated by the Buffalo & Erie Coach Corporation. The joint tariff issued by the two railroads and this trucking corporation is on a strictly steam railroad basis, with shipments as fast if not

faster than by railway express. Shipments delivered to the Buffalo & Erie Railway as late as 5 o'clock in the afternoon are delivered in Cleveland by noon the following day.

By still later tariffs, the company has just completed arrangements by which it can handle freight from Buffalo and other points on the line to Akron and other stations on the Northern Ohio Traction & Light Company line as well as to points on the Cleveland South-west Railroad and Lake Shore Electric Railway out of Cleveland. The company hopes by January to extend this service still further to reach points in Michigan, Indiana and as far south as Cincinnati and Louisville, and it has become a party to the tariff of the Electric Package Agency. The company also expects to take through shipments east as far as Oswego, Syracuse, Utica, Rochester and Buffalo and hopes to be able to guarantee considerably more rapid delivery than the steam railroad for this service.

The view shown of one of the freight cars of the company illustrates the practice of the company in carrying a slogan to advertise its passenger service as well as its freight service. The passenger service slogan on this car reads: "Limited observation chair passenger cars every two hours between Buffalo and Erie." Other freight cars carry different slogans.

Statistics of the Industry

Table Just Compiled Shows Number of Companies, Miles of Track and Types of Cars Used in the United States

PUBLICATION annually of a table showing the miles of track and number of cars operated by the electric railway companies of the United States has been a feature of the statistical work undertaken by this paper almost since its establishment in 1884. These statistics are obtained each year from the data received for the McGraw Electric Railway Directory, which is now published annually in February. A table of this kind, based on the February, 1925, issue of the directory, was published in the issue of this paper for March 7, 1925.

This year it was decided, as many of the reports for the 1926 directory have been received, to compile and publish this table as early in January as possible, and it is printed herewith. All of the advance reports for the 1926 directory received during the past month have been used in its compilation, as well as reports sent in for the 1925 directory but received too late to be included in it. Where the figures on individual railroads were still missing, the figures which appeared in the February, 1925, directory have been employed. Altogether about 40 per cent of the reports used to make up the accompanying table are new and 60 per cent were taken from the 1925 directory.

The method of compiling the figures which has been used in past years has been continued this year. The following is a brief statement of them. The mileage and cars of an interstate road have been placed in the state containing the greatest mileage of that company. The table includes the mileage and cars used on electrified sections of steam railroads, as well as on city and interurban electric railways. Cable railway cars, of which there are a few left in cities in the Pacific States, have been included under "Passenger Trail Cars."

On roads operating by both steam and electricity an

NUMBER OF ELECTRIC RAILWAY COMPANIES, MILES OF TRACK AND NUMBER OF CARS OF VARIOUS TYPES OWNED BY ELECTRIC RAILWAY COMPANIES IN 1925

	No. of Cos. Operating	Miles of Single Track	Passenger Motor Cars	Passenger Trail Cars	Electric Locomotives	Freight Motor	Freight Trailers	Service Cars	Other Cars	Total All Cars
New England States										
Connecticut...	9	1,574.27	1,606	68	120	61	12	259	1	2,127
Maine.....	14	511.62	384	8	6	31	76	122	24	651
Massachusetts	28	2,571.06	5,008	252	10	95	12	887	73	6,337
New Hamp....	12	258.63	324	2	2	5	1	50	9	393
Rhode Island.	4	381.20	1,044	26	3	35	...	165	...	1,273
Vermont.....	6	113.72	89	...	5	3	3	9	3	112
1925 total...	73	5,410.50	8,455	356	146	230	104	1,492	110	10,893
1924 total...	72	5,518.05	8,621	419	136	258	124	1,485	122	11,165
Eastern States										
Delaware.....	1	139.73	191	72	...	3	...	30	...	296
D. of Col....	6	388.50	929	85	8	5	22	123	...	1,172
Maryland....	9	687.68	1,967	164	13	22	74	11	14	2,265
New Jersey...	21	1,434.17	2,923	108	2	7	10	323	23	3,396
New York....	86	5,428.19	16,697	1,614	132	111	103	1,546	537	20,740
Pennsylvania.	96	4,591.65	7,651	497	6	178	98	1,066	122	9,618
Virginia.....	13	447.21	863	63	3	17	32	60	1	1,039
W. Virginia...	14	696.72	398	9	19	19	30	37	4	516
1925 total...	246	13,813.85	31,619	2,612	183	362	369	3,196	701	39,042
1924 total...	252	13,736.76	32,180	2,603	174	342	373	3,364	708	39,744
Central States										
Illinois.....	40	3,553.55	6,342	870	63	343	1,082	704	15	9,420
Indiana.....	28	2,485.45	1,783	269	9	57	662	120	367	3,267
Iowa.....	22	957.79	716	111	36	20	378	153	8	1,422
Kentucky....	6	485.83	765	62	2	15	10	143	8	1,003
Michigan.....	22	1,794.91	2,817	338	23	133	170	300	274	4,055
Minnesota...	10	707.11	1,212	10	4	4	2	104	2	1,338
Missouri.....	19	1,145.02	2,568	265	4	21	27	344	22	3,251
Ohio.....	59	3,826.97	4,140	579	33	241	456	462	364	6,275
Wisconsin...	18	801.22	1,163	74	8	38	30	241	4	1,558
1925 total...	224	15,757.85	21,506	2,578	180	872	2,817	2,571	1,065	31,589
1924 total...	228	15,787.40	21,462	2,555	186	839	2,725	2,564	1,087	31,418
Southern States										
Alabama.....	8	384.09	467	80	2	10	34	104	15	712
Arkansas....	8	125.32	223	19	...	1	4	17	3	267
Florida.....	7	196.61	353	11	...	12	5	26	...	407
Georgia.....	10	459.95	688	32	1	4	10	13	46	794
Louisiana....	9	315.55	826	45	...	3	...	82	2	958
Mississippi...	7	94.08	106	20	...	5	1	5	2	139
N. Carolina...	8	355.09	295	22	17	6	161	25	8	534
S. Carolina...	4	126.18	126	9	...	1	...	6	12	154
Tennessee....	9	417.43	669	80	1	5	2	65	5	827
1925 total...	70	2,474.30	3,753	318	21	47	217	343	93	4,792
1924 total...	72	2,524.33	3,816	328	22	51	227	340	95	4,879
Western States										
Arizona.....	3	43.79	48	...	...	...	...	3	...	51
California...	33	3,408.80	4,247	310	90	104	3,653	660	63	9,127
Colorado....	10	392.25	392	138	8	7	185	122	6	858
Idaho.....	2	88.70	32	...	3	...	21	3	...	59
Kansas.....	13	517.29	360	26	3	46	113	43	...	591
Montana....	7	845.19	112	26	89	7	2	12	...	248
Nebraska....	5	250.96	605	10	3	4	...	93	...	715
Nevada.....	1	7.5	5	...	...	...	...	...	...	5
New Mexico..	2	10.95	16	...	...	...	...	...	...	71
N. Dakota....	4	25.79	40	22	...	...	...	2	34	71
Oklahoma...	13	370.66	289	16	9	6	187	22	34	563
Oregon.....	9	754.39	700	93	19	...	506	194	58	1,570
S. Dakota....	2	19.75	27	...	...	...	2	2	...	34
Texas.....	22	1,017.83	1,404	95	1	19	12	137	25	1,693
Utah.....	5	483.09	217	45	21	7	240	13	211	754
Washington...	14	1,040.25	1,063	92	33	47	710	88	...	2,033
Wyoming....	1	16.50	8	...	...	...	...	...	4	12
1925 total...	146	9,293.69	9,565	873	279	249	5,631	1,402	401	18,400
1924 total...	145	9,270.22	9,599	863	281	300	5,567	1,339	479	18,428
1925 total U.S.	759	46,750.19	74,898	6,737	809	1,760	9,138	9,004	2,370	104,716
1924 total U.S.	769	46,836.76	75,678	6,768	799	1,790	9,016	9,092	2,491	105,634

effort has been made to include in the table only that equipment used in electric railway service. In consequence, the trail freight cars of the Fort Dodge, Des Moines & Southern Railroad and the coal cars reported by the East St. Louis & Suburban Railway and the St. Louis & Belleville Electric Railway are not included. The 3,000 package cars of the Chicago Tunnel Company are also omitted.

Dr. W. B. Bizzell, president of the University of Oklahoma, wrote to R. C. Sharp, president, and E. F. McKay, manager, of the Oklahoma Utilities Association, recently, announcing a four-year course in the School of Business, to be entitled "Public Utility Administration," effective with the scholastic year 1926. This announcement follows correspondence and conferences between the university executives and officers of the Oklahoma Utilities Association covering a period of more than two years.

Photography an Aid to the Railways

A Survey Covering 50 Representative Companies Shows Extensive Utilization of Photographs—
Claims Department Work, Publicity and Progress Records of Construction Are the
Principal Uses—A Majority of the Railways Have Private Photographers
—Advantages and Disadvantages of This Practice Are Discussed

PHOTOGRAPHS taken by a group of 50 representative electric railways during the past year range in number from two to 4,000 per company. To record the situation existing at the time of an accident is the purpose for which most of these photographs are used, according to information submitted by the various companies in reply to letters of inquiry from *ELECTRIC RAILWAY JOURNAL*. Publicity work, safety work, progress records and personnel records are other common uses. A number of railways, however, have developed unusual and interesting applications of photography.

From the comparative numbers of pictures taken by the different companies during the past year it is apparent that some railways have developed the use of photographs to a much greater extent than others. The largest number taken by any company from which information was received was 4,000 by the Cleveland Railway. Next among those replying to the *JOURNAL*'S inquiry were the Philadelphia Rapid Transit Company, 3,500; the Third Avenue Railway of New York City,

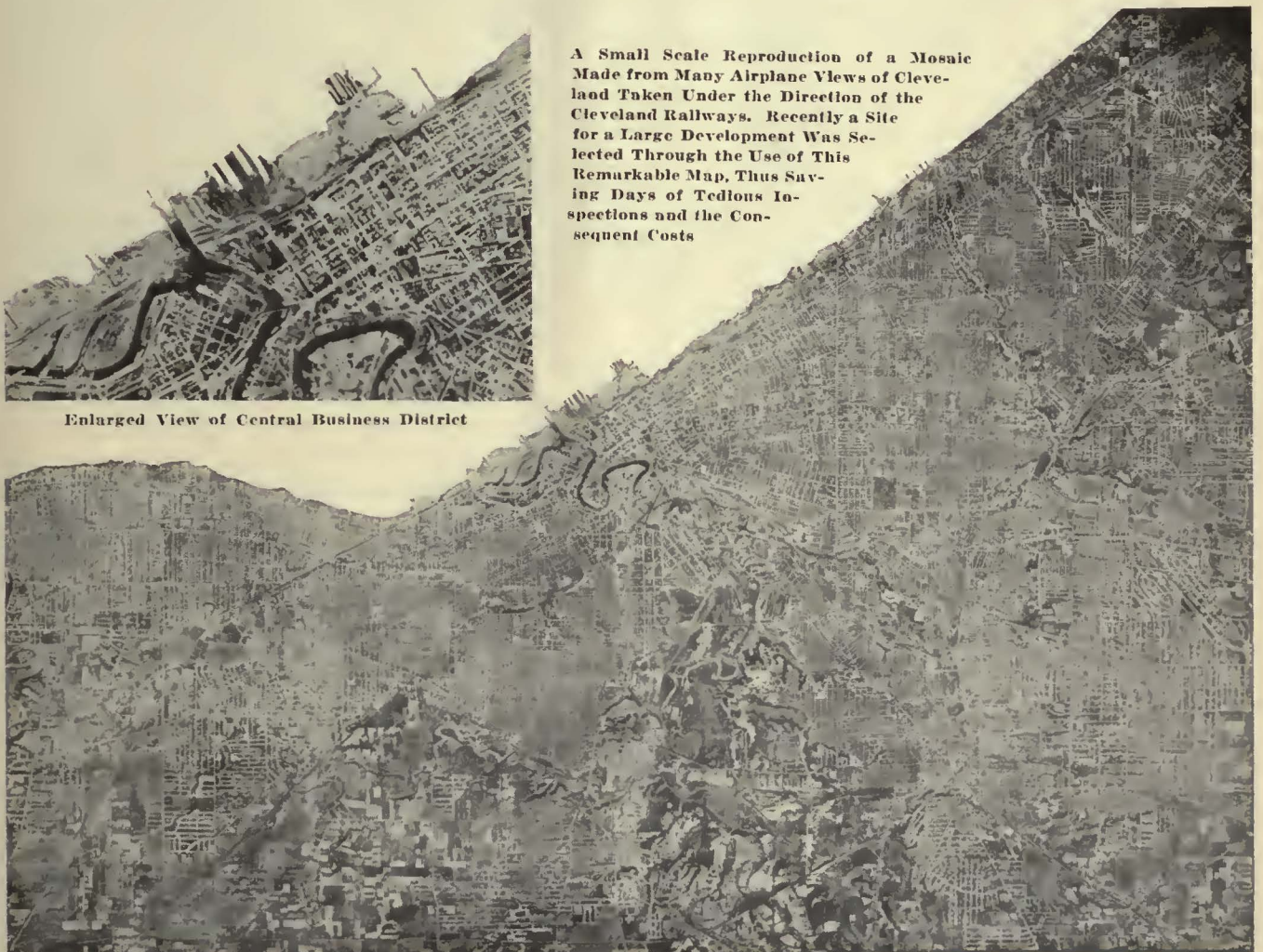
3,000; the Kansas City Railways, 2,682; the United Railways of St. Louis, 1,971; the Market Street Railway of San Francisco, 1,555, and the North Shore Line and the Milwaukee Electric Railway & Light Company, with 1,000 each. Several of the medium-sized and smaller railways use a considerable number of photographs. Among these are the Omaha & Council Bluffs Street Railway, which took some 900 during the past year; the Dallas Railway, 300; the Nashville Power & Light Company, and the Grand Rapids Railway, 200 each; the Middlesex & Boston Street Railway and the Union Street Railway of New Bedford, 100 each.

More than half of the companies replying to the inquiry have photographers in their own employ. Quicker availability of a private photographer is an advantage mentioned by a number of companies. Work done by a company photographer is likely to be less expensive than that of an outside man, it is said. In the case of the smaller railways, however, there is not sufficient photographic work to require a man's



Enlarged View of Central Business District

A Small Scale Reproduction of a Mosaic Made from Many Airplane Views of Cleveland Taken Under the Direction of the Cleveland Railways. Recently a Site for a Large Development Was Selected Through the Use of This Remarkable Map, Thus Saving Days of Tedious Inspections and the Consequent Costs



full time, and many of these companies prefer to use a public photographer. Others have the work done by one of their regular employees, as do practically all the large companies.

The Mobile Light & Railroad Company states that it finds that its own photographer understands better than does a public photographer just what is wanted in the picture. The publicity director of the New Orleans Public Service, Inc., states that most public photographers either cannot or will not take dramatic pictures and for that reason he does most of the work himself.

Definite advantages in having photographic work done by an outside man are mentioned by several railways. For use as evidence in court in accident cases it is said that the pictures taken by a public photographer are more valuable than those taken by a company man. Thus many railways use both public and private photographers, depending on the purpose for which the pictures are being taken.

MANY PICTURES PORTRAY ACCIDENTS

Claims department work is the most general reason for taking photographs. The statement of the Middlesex & Boston Railway summarizes the general practice. "Pictures taken of the locus of accidents, the street car and the other vehicles which are in the accident have very frequent use and are extremely valuable in many cases. This is especially true of automobile cases, where question arises about the registration. A picture showing the plate has been the deciding factor in several cases. Another common use is to meet a claim by the injured party that he or she is unable to use an arm or leg, bend a knee or work. Patient

and persistent activities in the neighborhood of the claimant's home will usually afford an opportunity for a picture in which an arm is raised or a knee is bent or vigorous muscular work is being done. Sometimes where the liability is clear, such a picture has resulted in a defendant's verdict, because the plaintiff is shown to have lied outrageously. Of course, in common with other railways, we find pictures valuable in showing street conditions with respect to holes, worn pavements, claimed bad rail, or snow and ice."

Along somewhat similar lines, the Ottawa Electric Railway states: "We find that photographs showing damage done in accidents, marks on our cars showing where collision has taken place, condition of streets, etc., make excellent exhibits in court in damage cases. We have also found it advisable before breaking into pavement on city streets to lay tracks to have photographs taken of the pavement before it is disturbed. These are valuable afterward as our contract with the city requires that we restore the pavement in as good condition as we found it."

Many electric railways use photographs as a means of keeping records of the progress of construction work. In some cases, the pictures are taken at regular intervals, but more often they are used to illustrate some particular stage of the construction or some special condition existing at a particular time.

Use of photographs in personnel work appears to be increasing. The Duluth Street Railway has for many years had photographs taken of applicants for positions and prints of these are filed with the applications. This is done by a regular man in the employment department who is furnished with photographic apparatus and material by the company. The Kansas City Rail-

SUMMARY OF PHOTOGRAPHIC WORK DONE BY 50 ELECTRIC RAILWAYS

Company	Public Photographer or Regular Employee	Number Photographs Taken Annually	Principal Use
Androscoggin & Kennebec Railway, Lewiston, Me.	Public	....	Accidents.
Binghamton Railway, Binghamton, N. Y.	Public	20	Accidents, publicity.
Capital Traction Company, Washington, D. C.	Public	20	General records, publicity.
Chicago North Shore & Milwaukee Railroad, Highwood, Ill.	Both	1,000	General records, construction work, community development.
Cleveland Railway, Cleveland, Ohio	Both	4,000	Accidents.
Cumberland County Power & Light Company, Portland, Me.	Public	50	Accidents.
Dallas Railway, Dallas, Texas	Public	300	Construction work, publicity.
Denver Tramway, Denver, Col.	Both	50	Accidents, publicity, general records.
Duluth Street Railway, Duluth, Minn.	Both	100	Accidents, personnel records.
Eat St. Louia & Suburban Railway, East St. Louis, Ill.	Both	250	Accidents, safety work, general records.
Eastern Massachusetts Street Railway, Boston, Mass.	Both	150	Accidents, way and structure inspection records.
Grand Rapida Railway, Grand Rapida, Mich.	Public	200	Construction work, amusement parks.
Indiana Service Corporation, Fort Wayne, Ind.	Public	100	Accidents, construction work.
Johnstown Traction Company, Johnstown, Pa.	Public	....	Publicity
Kansas City Railways, Kansas City, Mo.	Employee	2,682	Accidents, safety work, personnel records, publicity
Kentucky Traction & Terminal Company, Lexington, Ky.	Public	50	Publicity.
Knoxville Power & Light Company, Knoxville, Tenn.	Both	200	Accidents, construction work records.
Macon Railway & Light Company, Macon, Ga.	Public	....	Accidents.
Manchester Street Railway, Manchester, N. H.	Public	2	Accidents.
Market Street Railway, San Francisco, Cal.	Employee	1,555	Accidents, construction work and personnel records.
Massachusetts Northeastern Street Railway, Haverhill, Mass.	Public	....	Accidents.
Memphis Street Railway, Memphis, Tenn.	Public	....	Various.
Michigan Electric Railway, Jackson, Mich.	Public	20	Accidents.
Middlesex & Boston Street Railway, Newtonville, Mass.	Employee	100	Accidents.
Mobile Light & Railroad Company, Mobile, Ala.	Both	50	Accidents, construction work records.
Nashville Railway & Light Company, Nashville, Tenn.	Public	150	Accidents, publicity.
New Orleans Public Service, Inc., New Orleans, La.	Employee	700	Construction records, publicity.
Northern Ohio Traction & Light Company, Akron, Ohio.	Public	....	Accidents, publicity.
Northern Texas Traction Company, Fort Worth, Texas	Both	250	Accidents, publicity, construction work records.
Omaha & Council Bluffs Street Railway, Omaha, Neb.	Employee	900	Accidents, valuation work.
Ottawa Electric Railway, Ottawa, Ont., Canada.	Public	....	Accidents, publicity, construction work records.
Pacific Electric Railway, Los Angeles, Cal.	Public	220	Publicity.
Philadelphia Rapid Transit Company, Philadelphia, Pa.	Employee	3,500	Accidents, publicity.
San Diego Electric Railway, San Diego, Cal.	Employee	100	Accidents, construction work records.
Schenectady Railway, Schenectady, N. Y.	Employee	50	Accidents, construction work records.
Shreveport Railway, Shreveport, La.	Public	....	Accidents, publicity.
Spokane United Railways, Spokane, Wash.	Both	90	Accidents, publicity.
Springfield Street Railway, Springfield, Mass.	Public	25	Accidents.
The Milwaukee Electric Railway & Light Company, Milwaukee, Wis.	Employee	1,000	Accidents, publicity, construction work records.
Third Avenue Railway, New York, N. Y.	Both	3,000	Accidents.
Toronto Transportation Commission, Toronto, Ont., Canada.	Employee	400	Construction work records.
Twin City Rapid Transit Company, Minneapolis, Minn.	Both	300	Accidents.
Union Street Railway, New Bedford, Mass.	Public	100	Accidents.
Union Traction Company of Indiana, Anderson, Ind.	Employee	75	Accidents, safety work.
United Electric Railways, Providence, R. I.	Public	6	Publicity.
United Railways of St. Louis, St. Louis, Mo.	Both	1,971	Accidents, publicity.
Virginia Electric & Power Company, Richmond, Va.	Public	....	Publicity.
Washington Railway & Electric Company, Washington, D. C.	Both	....	Accidents, construction work records.
Winnipeg Electric Company, Winnipeg, Man., Canada	Both	....	Accidents, publicity
Youngstown Municipal Railway, Youngstown, Ohio.	Public	....	Accidents, construction work records.

ways and the Market Street Railway of San Francisco are other companies which follow this practice.

Publicity work is another important reason for taking photographs. Two years ago the New Orleans Public Service, Inc., took pictures of its span wire poles throughout the city before removing various unlawful signs, and by picture publicity was successful in preventing the return of this evil. Many pictures are taken by this company for historical purposes, to show development, etc. This railway, however, does not use the photographs themselves in advertising, but to aid the artist in visualizing the subject when he makes line drawings for advertisements.

Recently the Shreveport Railways had a moving picture made for publicity purposes. This showed the unloading of some new cars that had just arrived, their progress through the shop, the machinery, piping, wiring under the cars, then the start of the cars from the carhouse, out onto the lines, the congestion caused by automobiles, and the operation of the cars.

The Virginia Electric & Power Company, while using photographs in various of the usual ways, has also utilized a number of aerial photographs showing pro-

Interurban Bus Lines Operated by City Railway

Trenton & Mercer County Traction Corporation Has Extended Its Service to Points 65 Miles Distant— Traffic Shows Marked Seasonal Fluctuations— All Buses Start from a Central Terminal

UNDER the name of the Central Transportation Company, the Trenton & Mercer County Traction Corporation, Trenton, N. J., has established an extensive system of interurban and city bus lines. Three city routes are operated, serving districts not previously provided with convenient transportation facilities. Outside the city eight bus routes are operated by this company. In character they vary from suburban service on a route 2.5 miles in length to long-distance service to points as far away as 65 miles.

This long-distance interurban service is the most interesting phase of the company's operations. Bus routes connect Trenton, the capital of the state, with the town of Lakewood, a health resort 45 miles distant, and with the seacoast cities between Asbury Park and



Buses of the Central Transportation Company, a Subsidiary of the Trenton & Mercer County Traction Company, Waiting at the Trenton Terminal

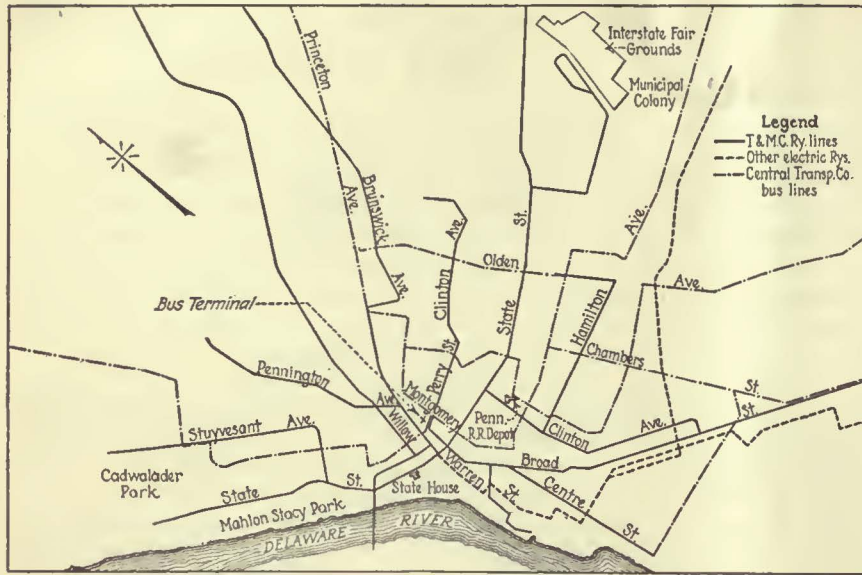
posed rights of way for a transmission line. Aerial pictures have been used also by the Chicago Surface Lines, as told in an article in the ELECTRIC RAILWAY JOURNAL, Aug. 8, page 202. Practices of the Boston Elevated Railway and the United Railways & Electric Company of Baltimore also were described in that article.

Cars Faster than Buses in Test

IN ORDER to compare the speed of buses on Fifth Avenue, New York City, and street cars on Third Avenue between Fourteenth and Fifty-seventh streets, checkers of the Third Avenue Railway some time ago carefully timed a number of trips of both vehicles. The distance from Fourteenth to Fifty-seventh Street is 2.1 miles. The average running time of buses was 29 minutes, making the speed 4.3 m.p.h.; average running time of cars was eighteen minutes, making the speed 7 m.p.h. The average number of passengers on the buses at Fourteenth Street and boarding within the area was 54, while on the cars it was 111.

Bayhead, 60 to 65 miles away. A sufficient amount of all-year traffic exists between the seacoast cities and Trenton to pay bus operating expenses even during the winter months. In summer the volume of traffic is much larger and the route is a distinctly profitable one.

Four trips a day are operated from Trenton through Freehold and Asbury Park to Bayhead. Two other trips are operated from Trenton through Freehold to Lakewood. At Freehold connection is made with a short local line operating on an hourly schedule between that city and Asbury Park. For ordinary service two buses are required between Trenton and Bayhead and one between Trenton and Lakewood. Fageol parlor car coaches are used. Short service between Freehold and Asbury Park is supplied by two additional buses, which are Fageols with street car type bodies. Through fare from Trenton to Bayhead is \$2.30. Packages are transported between points on the interurban routes in so far as it can be done without interfering with the convenience of passengers. The rate is only 2 cents per pound with a minimum charge of 25 cents.

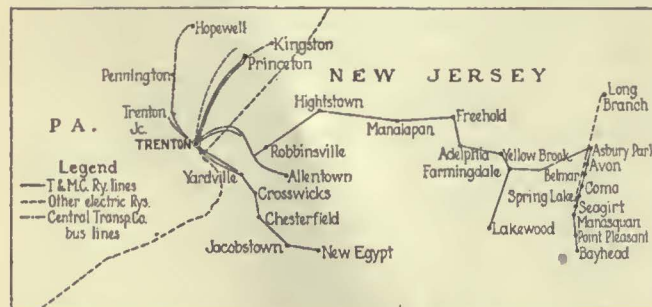


Within the City of Trenton Bus Routes Have Been Arranged so That There Is Little Duplication of Existing Railway Service

Other interurban bus lines are operated by the company to Kingston, Allentown, New Egypt, Hopewell and Chambersburg. On these lines the headways are one hour and two hours. A summary of the headways, number of buses operated, running time and mileage of the various routes is given in the table below. On portions of all the interurban routes the service duplicates that of other bus and railway lines. Where the interurban bus lines of the Central Transportation Company operate on the same streets as the railway lines of the Trenton & Mercer County Traction Corporation the buses do not pick up and discharge local passengers. A similar practice is followed between Asbury Park and Sea Girt, where the buses operate through territory served by the Coast Cities Railway. The relation between these routes and the other car and bus routes of the company is shown on the accompanying maps.

In the majority of cases bus service on these routes was undertaken by the railway to forestall independent operation. Application had been made to operate inter-

Route	Destination	Type	Headway	No. Buses	Running Time
A	Empire Rubber Co.	City	30 min.	2	30 min.
A-1	Municipal Colony	City	30 min.	1	15 min.
B	Labor Street	City	30 min.	3	30 min.
C	Trenton Junction	City	1 hr.	1	30 min.
D	Kingston	Interurban	2 hr.	1	1 hr.
E	Allentown	Interurban	2 hr.	1	1 hr.
F	New Egypt	Interurban	2 hr.	1	1 hr.
H	Hopewell	Interurban	1 hr.	2	1 hr.
K	Chambersburg	Interurban	1 hr.	1	30 min.
K-1	Hutchinson's Millia	Interurban	1 hr.	1	30 min.
	Bayhead	Interurban	4 per day	2	3 hr. 15 min.
	Lakewood	Interurban	3 per day	1	2 hr. 5 min.
	Asbury Park-Freehold	Interurban	1 hr.	2	1 hr.



Long Interurban Bus Routes of the Trenton & Mercer County Traction Corporation Connect Trenton and Seacoast Cities

urban buses on streets where the railway had tracks. The management felt that it would be undesirable for independents to operate in this way, and for that reason the railway itself undertook to supply the desired bus service. In so doing it has endeavored to arrange its routes with a minimum of duplication.

Of the three city bus lines two serve districts somewhat remote from existing car lines. The third is a crosstown route which intersects a number of other transportation lines, making it possible to travel from one outlying section of the city to another without passing through the congested business district. Headways on the city lines are 30 minutes, with fifteen-minute service on a portion of one route.

All of the interurban lines, except the short line from Asbury Park to Freehold, start from the motor coach terminal of the Central Transportation Company on Perry Street. Two of the three city lines also start from this point. A plot of land has been purchased by the company at this location, which is only a few minutes walk from the center of the city. Temporarily a waiting room has been made from two old street car bodies. It is planned to construct a combined waiting room and terminal in the near future.

In regular service nineteen buses are required. Headways are not shortened during the rush hours and no extra vehicles are required at those times. Three buses are kept in the garage each day for inspection and three are ordinarily used for special trips. Two buses are provided for overhauling, making a total of 27. Occasionally it is necessary to double-head some of the seashore trips. Inspection buses or those reserved for special trips are used. The equipment of the company consists of two Macks, two Six-Wheel buses, five Whites and eighteen Fageols, including four of the parlor-car type.

Service Speeded Up by West Virginia Line

THE Monongahela West Penn Public Service Company has been making many improvements in its railway service at Clarksburg, W. Va. A recent statement announces a cut in the running time of its trains between Clarksburg and Weston from an hour and a half to an hour and five minutes.

W. E. Davis, of the company, who announced the change, said the new schedule calls for cars to leave Clarksburg at 5:35 a.m. and every hour thereafter until 11:35 at night. They will leave Weston at 5:10 a.m. and every hour until 11:10 at night. He said:

We have had many requests from our patrons to get them from Clarksburg to Weston and from Weston to Clarksburg a little quicker. To accomplish this we rebuilt portions of our track, equipped the cars for faster operation and installed new passing sidings. All of these things have just been accomplished and we are glad that we are able to offer the new service. I think it will be a very popular mode of travel. We are glad to install the new service, for in doing so we are keeping a promise made to our friends some time ago.

Valuation Principles in Baltimore Case

An Extended Analysis Is Given of the Methods Used Recently to Obtain for the United Railways & Electric Company of Baltimore Figures for Original Cost, Reproduction Cost of Physical Property, Undistributed Structural Costs, Going Value, Depreciation and Present Value

By *W. H. Maltbie*

Special Counsel United Railways & Electric Company of Baltimore

MANY points of interest to the electric railway industry were developed in the valuation case of the United Railways & Electric Company of Baltimore, which was presented to the Public Service Commission of Maryland during the past summer.

Since the methods used in the case were quite typical, the processes are here analyzed to indicate the way the value was built up for presentation to the commission.

The United Railways & Electric Company of Baltimore operates the entire system of street railway transportation in Baltimore and in its outlying suburbs, with the exception of one short spur line leading to a local cemetery and the direct interurban lines without local service operated by the Washington, Baltimore & Annapolis Electric Railway between Baltimore and Washington and Baltimore and Annapolis. It has 433.33 miles of track, of which 245.85 is in paved streets, and operates a total of 1,488 cars. In 1924 it operated 35,973,691 car-miles and carried 228,423,774 revenue passengers, with a total operating income of \$16,453,254.31 and gross operating expense of \$12,293,999.31. Its total capitalization is \$88,134,900, of which \$53,673,700 is bonds, \$14,000,000 income bonds and \$20,461,200 common stock. These figures cover the securities of the United Railways & Electric Company itself, certain bonds of underlying companies, and such securities of its subsidiaries as are held in the hands of the investing public.

The original street railway system of Baltimore was created in 1859, at which time the city, by ordinance, granted certain rights to the Baltimore City Passenger Railway. In view, however, of some uncertainty as to the city's power to enter into an agreement of the sort then attempted, the Legislature granted a charter to the original company in 1862. Thereafter numerous companies were organized from time to time, until Baltimore, like most other cities of its size, had in the '80s and early '90s a large number of competing horse car or cable companies.

The usual era of consolidation followed and the various companies were absorbed by successive steps, until finally in 1899 the present company was created as a complete consolidation of the then existing lines in and around Baltimore.

CIRCUMSTANCES LEADING UP TO THE CASE

Rates of fare had always been fixed in Baltimore by act of the Maryland Legislature, and no change took place from 1900, the year following the consolidation, down to 1918, when the Public Service Commission of Maryland authorized a 6-cent fare.

The Public Service Commission of Maryland, created in 1910, began in 1913 a valuation of the property of

the company. The company engaged the firm of Stone & Webster, which in 1914 made a complete valuation of the physical property of the company and submitted it to the commission for its consideration. The engineering forces of the commission checked the inventory, made an independent valuation of the physical property and in 1915 a series of engineering conferences agreed upon figures to be submitted to the commission covering all physical property except land, buildings and street paving.

There was pending at that time an important statewide valuation case of the telephone company, and hearings on the railway case were temporarily postponed. After this and before actual hearings could be started the unsettled financial conditions resulting from the World War intervened, and by mutual consent of the commission and the company the case was carried over without action. This was a natural and simple solution of the problem in view of the fact that there was pending no request for a change of fare either on the part of the commission or on the part of the company.

The rate of fare at this time in Baltimore was 5 cents with universal transfer, with a gross receipts tax, known as the park tax, of 9 per cent on all fares collected on city streets. The United Railways & Electric Company continued to operate on this fare, despite increased costs, until 1918, when it became evident that some action must be taken. The company therefore, acting under the public utility law, filed 30 days notice of an increase in the rate of fare. The commission objected and a rate case was heard in the fall of 1918, which resulted in the increase to 6 cents above noted. This proved insufficient, and later rate cases resulted in successive increases from 6 cents to 6½ cents, to 7 cents, and finally to the present rate of 8 cents, two for 15 cents.

In an early one of these rate cases the commission adopted as a guide in dealing with this particular company the principle that its return over and above operating expenses, depreciation and taxes should be sufficient to maintain the credit of the company, and that this could be accomplished by allowing the company to earn something between 1½ and 1½ times its fixed charges (i.e., rentals and bond interest), and subsequent adjustments of the rate structure were made in accordance with this principle.

In the spring of 1924 the company filed a petition asking for an increase of the rate of fare from 7 cents to 8 cents or two for 15 cents, pointing out that under the existing rate schedule it was earning less than the minimum of 1½ times its fixed charges and that the increasing costs of operation had wiped out all of the

economies and modifications that the company had been able to devise in the hope of raising its income above this fixed minimum. At the same time the company pointed out that if the commission was unwilling to continue to operate under the theory outlined above, the company stood ready to complete the valuation of its property as a basis for future rate schedules.

The majority of the commission decided that the company was entitled to the increase in rates for which it asked and passed an order putting these rates in effect, but providing for the completion of the valuation case. The third member of the commission was unwilling to make any change in the rate structure until after the valuation had been completed.

PREPARATION OF THE CASE

The ten years that had elapsed since 1914, the date of the completion of the Stone & Webster appraisal, had brought such tremendous changes in unit costs, and even in detail methods of construction, that the company felt that the Stone & Webster appraisal was no longer usable and therefore undertook a complete re-inventory of its property and a new valuation. The work was carried on during the fall and winter of 1924 and 1925, and the case finally came to trial on May 4, 1925.

The United Railways firmly believes that the yardstick method of appraisal is fully as efficient as the more detailed method, and certainly much more economical, and its officers in the American Electric Railway Association have voted for the approval of this particular principle. The company has, however, always recognized that the yardstick appraisal does not lend itself to a case where there is apt to be a legal contest and an effort to enforce the technical rules of evidence, and for that reason, face to face with a case of that sort, it proceeded in the usual form of a detailed inventory and valuation.

The entire work was handled by the engineering and legal staff of the company, although expert witnesses who were familiar with special phases of the work were frequently used from time to time during the proceedings.

The appropriation at the disposal of the Public Service Commission was not adequate for an independent, detailed valuation on the part of the commission staff. The company therefore furnished the commission with its detailed inventory as completed, and this was spot-checked or checked until the commission staff was satisfied that the inventory was accurate. The company also furnished the commission with the unit prices used by it in pricing its inventories and with the total figures for each class of property. These were checked and studied by the commission staff, who prepared in this way their own valuation of the physical property of the company.

This work on behalf of the commission was done by its own engineering forces and by Robert M. Feustel, employed as a consulting expert; all of it, however, under the general supervision of the people's counsel, a direct appointee of the Governor provided for in the Maryland public utility law, whose duty it is to act as opposing attorney to the utilities in all important cases.

The company prepared its case on the theory that no one definite measure of value exists, but that all information which can be helpful to the commission should be placed before it, and that in particular the commission should have information with regard to original cost, par and market value of securities, repro-

duction cost at current unit prices and evidence as to whether or not present price levels might be regarded as relatively static.

ORIGINAL COST

On original cost the company took the position that original cost must serve either one or the other of two purposes. The first of these is to constitute a check on the reasonableness of the present-day claim for reproduction cost. The second is to give some index or evidence as to the amount of the investor's sacrifice or the original dollars devoted to the public service. For the first of these purposes the original cost which is desired is the price paid for the various articles when they were first devoted to public service. For the second the original cost desired is the price paid by the present investor, corporate or individual.

Original cost in the first of these instances, namely, the cost in dollars of the property when first devoted to public service, was for much of the present property of the company impossible of ascertainment. The original company, as indicated above, was created in 1859. Numerous other companies were formed and finally brought by a long train of receiverships, purchases, reorganizations and consolidations into the present single company. The lack of any uniform standard of accounting would have made it extremely difficult to determine original cost even if the books of the constituent companies had been in existence, but as a matter of fact many of these had been destroyed in the great fire which struck the business district of Baltimore in 1904, and the remaining records were fragmentary and incomplete. Everything which the company had was placed at the disposal of the commission staff, but all parties were agreed that a reconstruction of original cost as thus defined was impossible.

On the other hand, original cost in the sense of the amount invested by the present corporate owners was fortunately capable of very definite ascertainment. The final consolidation, which took place in 1899, differed from the usual consolidation in which two or more companies pool their stock and issue to the stockholders of the constituent companies agreed amounts of stock of the new company. There were in Baltimore in 1899 two large and two small systems, the large systems having been built up by consolidations of smaller companies. The two larger systems were not able to get together, and finally parties interested in the smaller systems acquired one of the two larger systems by the outright purchase of all but 374 shares out of a total of 140,000 shares of its outstanding stock, and then secured an option at a flat cash price on a majority of the stock of the second large company on the condition that the option price should be open to every stockholder if he desired to take advantage of it.

It was therefore perfectly possible to get a definite starting point, in cash paid plus underlying bonds assumed, for the property which went into the consolidation in 1899, and since the company's records from that date on were complete there was no difficulty in showing the net additions to capital from 1899 down to the date of the appraisal.

The question of whether the purchase of these stocks at the price paid was a prudent investment was answered, from the company's point of view at least, by the fact that the syndicate formed to take over the stocks thus acquired was very largely oversubscribed, that many of the owners of stocks who had an oppor-

TABLE SHOWING SUMMARY OF REPRODUCTION COSTS OF PROPERTY OF THE UNITED RAILWAYS & ELECTRIC COMPANY OF BALTIMORE AS OF JAN. 1, 1924

Account Number	Account	Undepreciated		Depreciated	
		Railways' Reproduction Cost New	People's Counsel's Reproduction Cost New	Railways' Reproduction Cost New	People's Counsel's Reproduction Cost New
502	Right-of-way—(private right-of-way in county from private parties).....	\$745,719	\$167,576	\$745,719	\$167,576
503	Other land used electric railway operations.....	1,850,662	1,336,380	1,850,662	1,336,380
504	Grading—city and county.....	2,239,931	1,864,790	2,239,931	1,625,122
505	Ballast.....	2,093,940	1,781,673	1,758,910	1,692,589
506	Ties.....	1,537,461	1,310,262	1,291,467	851,670
507	Rails, rail fastenings and joints.....	4,050,495	3,463,300	3,402,415	2,493,576
508	Special work (including electric switches).....	2,993,016	2,553,478	2,514,133	1,717,852
510	Track and roadway labor.....	4,825,215	3,706,007	4,053,181	2,408,905
511	Paving.....	3,297,811	2,810,172	2,770,161	2,248,138
512	Roadway machinery and tools.....	119,842	119,842	83,889	83,889
515	Bridges, trestle and culverts.....	1,281,419	1,307,327	1,046,474	1,045,862
516	Crossings, fences and signs.....	97,094	88,983	86,601	77,415
517	Signals and interlocking apparatus.....	153,583	137,579	150,511	123,821
518	Telephone and telegraph lines.....	305	289	274	260
519	Poles and fixtures.....	1,338,820	1,147,253	1,225,020	975,165
520	Underground conduits.....	219,723	189,464	210,934	179,991
521	Distribution system.....	3,852,902	3,261,386	3,449,118	2,870,019
523	Shops and carhouses.....	4,441,435	4,207,565	4,127,027	2,997,029
524	Stations, miscellaneous buildings and structures.....	340,799	222,552	308,452	174,899
526	Park and resort property.....	608,574	489,272	551,190	361,867
529	Other expenditures—W. & S.—Trackless trolley construction.....	45,676	.....	41,108	.....
530	Passenger and combination cars.....	11,985,622	10,504,354	10,805,789	7,353,048
	Passenger and combination cars trackless trolley buses.....	23,411	.....	18,729	.....
531	Freight, express and mail cars.....	52,094	39,322	46,885	19,661
532	Service equipment.....	454,148	477,729	363,318	262,751
533	Electrical equipment of cars.....	6,087,930	5,747,935	5,479,137	4,023,554
536	Shop equipment.....	350,595	350,596	280,476	280,477
537	Furniture.....	270,720	270,721	216,576	216,577
538	Miscellaneous equipment.....	153,012	153,012	92,007	99,458
539	Power plant buildings.....	46,095	43,325	42,868	28,115
540	Substation buildings.....	478,810	448,061	445,293	363,891
542	Power plant equipment.....	169,972	169,972	127,479	118,980
543	Substation equipment.....	1,837,859	1,837,859	1,690,830	1,562,180
544	Transmission system.....	759,898	642,083	683,900	577,875
	Total.....	\$58,804,588	\$50,850,119	\$52,181,743	\$38,338,592
	Engineering and superintendence.....	2,940,229	3,305,258	2,940,229	3,305,258
	Administrative and legal expense.....	1,176,092	.....	1,176,092	.....
	Law expenditures.....	.....	254,251	.....	254,251
	Taxes.....	462,229	462,229	462,229	462,229
	Organization prior to construction.....	1,764,138	.....	1,764,138	.....
	Insurance during construction.....	62,694	.....	62,694	.....
	Miscellaneous.....	.....	2,542,506	.....	2,542,506
	Working capital.....	2,000,000	1,400,000	2,000,000	1,400,000
	Total.....	\$67,209,970	\$58,814,363	\$60,587,125	\$46,302,836
	Interest during construction.....	7,393,097	4,593,149	7,393,097	4,593,149
	Total.....	\$74,603,067	\$63,407,512	\$67,980,222	\$50,895,985
	Cost of financing.....	4,476,184	3,170,376	4,476,184	3,170,376
	Total of reproducible property.....	\$79,079,251	\$66,577,888	\$72,456,406	\$54,066,361
	Going value.....	16,000,000	6,510,789	16,000,000	6,510,789
	Easements—City.....	17,816,292	.....	17,816,292	.....
	Easements—County.....	85,204	.....	85,204	.....
	Right-of-way—(Private right-of-way from turnpike companies).....	283,458	.....	283,458	.....
	Grand total.....	\$113,264,205	\$73,088,677	\$106,641,360	\$60,577,150

of three classes, private holdings in fee simple, perpetual easements acquired by purchase years ago from toll roads, and easements secured by county or municipal grant. The real estate group above mentioned testified as to the cost to reproduce, i.e., to acquire the rights of the first class as of the date of the appraisal. For the second class, and to some extent for the third class, the same group testified only as to the market value of an equivalent area of abutting land, holding that the determination of the value of these rights was a technical question not within their experience.

Buildings—On buildings the company created a committee formed of the heads of three of the largest contracting firms in Baltimore City. Their forces, working with the drawings in the possession of the company, with full access to the structures, and in co-operation with the staff of the commission, prepared a bill of materials for each building owned by the company and then proceeded to estimate a reproduction cost as of Jan. 1, 1924.

Trackage—The determination of the cost of reproducing the track of the company presented a great deal of difficulty. Like most older systems, the company had tried many forms of rail section and various methods of track construction, as well as a large number of different forms of pavement in various parts of the city. These were combined in so many ways that it

tunity to withdraw the cash chose rather to put the cash back into the syndicate, and, finally, that allotments in the syndicate sold on the Baltimore Stock Exchange at a premium of 14 per cent. The company argued from this that, judged by the standards of the day, the investment must have been regarded as a prudent and wise one.

The company showed in this way a total investment of \$69,000,000, exclusive of any allowance to the promoters or any profit to the final syndicate, but including a profit of between 5 per cent and 6 per cent to the purchasers of the first of the large companies.

REPRODUCTION COST

In order to determine reproduction cost the company engaged competent experts, so far as possible not connected with the company, and for the most part local men familiar with existing conditions in Baltimore and with the particular class of property they were to value. Thus for other land used in railway operations the company secured the services of three of the best known real estate men in Baltimore City, thoroughly familiar with all types of real estate, and asked them to make an independent valuation of the land and file copies with the company and with the commission.

Rights-of-Way—The company's rights-of-way are

was impossible to express the total trackage of the company in standard cross-sections. The engineering forces of the company therefore prepared a detailed statement of the type of track installed and the character of pavement, street by street and section by section. The data for each stretch of track were then transferred to a computing sheet and the various quantities of excavation, rail, labor, ties, etc., determined by a force of computers. The summation of these computing sheets gave a grand total of quantities for the system.

The next step was the determination of unit costs. Rail, ties or ballast presented no practical difficulties. The greatest difficulties were found in determining incidental charges, costs of labor and costs of hauling ballast and material and the removal of waste.

For the determination of incidental costs a careful study was made of the previous experience of this and other companies in large track replacement jobs or new construction. For labor costs careful studies were made of the proper organization of track-laying forces and the amount of work to be anticipated from each gang. For hauling costs the probable locations of yards, dumps and quarries were determined and the weighted average length of haul from each of these to the trackage served by it were computed. From these

figures it was easy to determine a weighted average length of haul for the system for yard material, for ballast and for the removal of excavated waste.

The company was attempting to determine reconstruction cost in the same way that a prudent and careful contractor would make an estimate. For that reason it felt itself compelled to select in every case the most economical method of construction. It therefore estimated all of its track excavation as steam shovel excavation and motor truck haul. It considered carefully the advisability of building from its own rail head and selected building by truck haul as the more practical and in the long run the more economical. For those suburban lines where it had steam road connection it built by steam road methods from its own rail head, leaving till the last step in the process the respiking of one rail, since the gage of the Baltimore system is not the standard gage.

Bridges.—For all of its bridge and trestle work the company secured the services of a local bridge engineer of high standing, not an employee of the company, although he had previously made a study for safety purposes of all of the company's structures of this type.

Rolling Stock.—In view of the fact that a very large portion of the rolling stock of the company had been purchased from time to time from the J. G. Brill Company, the Brill company was employed to prepare a complete reproduction cost estimate of all of the used car bodies and trucks. For this purpose the staff of the commission selected cars which might be regarded as typical of each group or model operated by the company. A complete bill of materials and full detail specifications were prepared for a type car of each group and submitted to the Brill company, which then determined the reproduction cost as of Jan. 1, 1924.

The electrical equipment of all rolling stock and the substation equipment were valued by the Westinghouse company and General Electric Company, each company valuing the equipment of its own manufacture.

Other Items.—The company has only one small power plant, purchasing most of its power from the Consolidated Gas, Electric Light & Power Company of Baltimore. This small plant was valued by a local firm familiar with power plant machinery.

The transmission and distribution systems, office furniture, shop equipment and other corresponding items were valued in detail by members of the company's staff.

DIFFERENCES WITH COMMISSION STAFF

All of these base values of physical property were checked by the commission staff or by other persons employed by the commission for that purpose. To a very large extent the commission staff after this check accepted the base values claimed by the company.

The exceptions were as follows:

Land.—The valuation of land was made for the commission by a local appraiser connected for many years with the Appeal Tax Court of Baltimore City. He differed as to the value of certain lands and showed a total for private rights-of-way and for other lands below that claimed by the company.

Buildings.—The same assessor of the Appeal Tax Court and a local builder checked the unit costs used by the company for building valuation. They objected to certain unit costs in concrete construction and also to certain incidental costs claimed by the company's appraisers, the total difference amounting to between

9 per cent and 10 per cent on the physical reproduction cost of the structures.

Rolling Stock.—On rolling stock the commission staff secured a lower value by determining so far as possible the price originally paid by the company both for cars and for electrical equipment of cars and applying to this original cost a trend curve based upon the labor and material curve prepared by Brill, a price curve prepared by the Westinghouse and General Electric companies, and other data collected by Mr. Feustel from time to time. The result was a figure considerably below the reproduction cost furnished by Brill for car bodies and by the Westinghouse and General Electric companies for electrical equipment.

On this matter, however, the company pointed out that the Brill curve, which was the main reliance of the commission staff on the matter of car bodies, covered labor and material only and introduced witnesses from the Brill organization who testified that no shop costs, overheads or merchandising costs were included in the curve, and that, if these were added, the index as of Jan. 1, 1924, would be much higher than the one shown by the labor and material curve. The difference more than covered the difference between the commission staff figures and those of the company.

Track and Roadway Labor.—On track and roadway labor the commission staff made a number of changes, some increases and some decreases over the figures presented by the company. The net result of the changes, however, was about equal to the change which the commission staff had made in the item of incidentals and contingencies.

Contractor's Profit.—The company had made its estimates on the assumption that certain important pieces of work, such as the construction of buildings, bridges, trackage, distribution and transmission systems, would be turned over to contractors, and had therefore included an item for contractor's expense and profit. The commission staff accepted the contractor idea so far as buildings and bridges were concerned, but rejected it for all track construction and for the transmission and distribution systems.

The company took the position that the employment of a contractor was in the last analysis an economy, in view of the insurance against additional incidentals, omissions and contingencies and in view of the value of the knowledge which an experienced contractor would furnish as contrasted with a new organization.

In support of its position the company introduced as witnesses A. T. Spencer of Toronto, thoroughly familiar with the reconstruction work carried on in that city, and Jonathan Wolf of the Chicago Surface Lines, thoroughly familiar with the work done there. In both cases the work had been done by the company's own construction forces, and the witnesses testified as to the percentage added to base cost of labor and material to cover actual costs of incidentals, contingencies and various overhead charges. This testimony supported the company's claim that its total cost, including the contractor's expense and profit, was reasonable.

With respect to the employment of a contractor on the transmission and distribution systems the company introduced witnesses who testified that it would be impracticable to build a construction organization sufficiently large to do the work involved in the limited time assumed for reconstruction purposes, and that the most economical way, as well as the only practical way if the work were to be accomplished within a limited

time period, would be to employ one or more contractors for the job.

Unused or Obsolete Property.—In connection with reproduction cost the company made no claim for property not used or useful. Thus it eliminated certain lands which it still holds but which are not used for railway purposes, a large number of cars which have been retired although not yet scrapped or written off the books and some buildings and power plant machinery not in actual operation.

The company attempted to make its position in these matters entirely clear to the commission, as follows: So long as the commission is considering original cost or investment, any property, once acquired, should remain in the rate base until such time as it has been amortized through payment made by the public in excess of a fair return. If, however, the question is not one of investment but one of present value, then superseded property or property no longer used or useful does not enter into the problem except, in some instances, as an evidence of the cost of developing the business, or, in other words, as evidence of the cost of one of the elements of going value.

Undistributed Structural Costs.—The claim of the company under this head was made up of the following items:

- For engineering and superintendence, 5 per cent.
- For administrative and legal expense, 2 per cent.
- For taxes, actual taxes for one year upon the present property other than income tax.
- For organization cost prior to construction, 3 per cent.
- For insurance during construction, actual insurance for one year on present property.
- For working capital, \$2,000,000.

On all physical property plus the undistributed costs above described the company claimed interest during construction of 11 per cent, and on the sum total of the previous items plus interest during construction a cost of financing of 6 per cent. The figure for interest during construction was reached by assuming:

1. A four-year construction period.
2. That the money necessary would be acquired at the beginning of the period at a cost of 7 per cent.
3. That the funds so secured would be deposited or invested in quickly negotiable securities and drawn upon as needed, so that against the 28 per cent of total interest charge there would be a credit of 3 per cent on half the money for all of the time, or a total credit of 6 per cent, making the net interest charge 22 per cent.
4. That half of this would be earned by operations during the construction period.

The result of these assumptions is a net claim of 11 per cent, as stated above.

For these undistributed costs the commission staff recommended the following:

- For engineering and superintendence, 6½ per cent, intended, however, to cover the contractor's engineering, while the company's claim covered only its own engineering in addition to that necessary for the contractor.
- For legal expenditures, ½ per cent.
- For miscellaneous expenses, covering some additional allowances to the contractor, pre-organization expense and administrative expense, 5 per cent.
- For taxes the commission staff recommended the allowance of the company's claim.
- For interest during construction, 8 per cent.
- For cost of financing, 5 per cent.
- For working capital, \$1,400,000.

GOING VALUE

The existence of going value and the propriety of its inclusion as a rate base was admitted by the commission staff, and it recommended a flat allowance of

10 per cent of the reproduction cost of physical property. The company, on the other hand, attempted to analyze going value and to determine the elements which enter into it and to make some estimate of their value.

The company's position on this matter, which is set forth in considerably more detail in its brief,* may be summarized as follows:

Going value is the sum of those elements which distinguish a concern in successful operation from a new concern fully built and equipped but not yet ready to operate. It is a by-product of operation, beginning to develop as soon as operation commences and increasing as long as the concern grows in experience, increases its knowledge of local conditions and continues to develop its tributary territory.

Various elements enter into going value, but the following may be specially noted:

The development of a trained personnel, not only of the executive staff but of routine workers as well.

The accumulation of valuable records.

The realignment of physical properties, traffic routes and operating personnel.

The supersession of property on account of local peculiarities of the situation.

The ability to maintain a trained staff of experienced workers by utilizing the company itself as a training school.

The development of suburban territory from lean traffic territory into fully populated urban areas.

The cost of producing some of these elements may be very definitely measured. For example, the company knows how much it costs to train motormen and conductors and knows also what it would cost to train them outside of its own operating system. It is also able to estimate with a considerable degree of exactness the actual cost of training other employees, either in the system as an operating whole or by the aid of outside instructors imported to train a new staff and operate the plant during the training period. It is also possible to determine the cost of reproducing many of the valuable records possessed by the company, or the cost of creating them in the first instance. These costs were not presented by the company as the final measure of value but as a minimum value, since it is obvious that a sensible operator could not be persuaded to destroy a record by merely paying him the cost of its reproduction, or to dismiss an experienced employee by merely paying the cost of training his successor.

On the other hand, it is possible to throw light upon the value of records or of experience by estimates of the increased cost of doing business without them. This increased cost per annum, capitalized at a fair rate of return, gives a sum which is undoubtedly greater than the value of the record or the experience, but it indicates, nevertheless, the magnitude and the importance of the element that is under consideration.

The company holds that going value, if existent, is the property of the company without regard to the question of whether the expense of creating it had been paid for as an operating cost. It recognized the fact, however, that in addition to the legal claim to going value the company has a still stronger equitable claim in those cases where the net return from operation during the period when going value was being developed has been less than a fair return. For this reason

*A limited number of copies of this brief are available for distribution to those interested.—W. H. M.

the company presented a statement showing the shortage of fair return below 6 per cent from the time of the consolidation in 1899 to 1916, and below 8 per cent from 1916 to the date of the valuation. This computation of shortage of income below fair return was not presented as proof of going value, but merely to strengthen the right of the company to claim going value by showing that the actual cost of creating it was borne by the stockholders and not by the public, even although it was charged to operating cost.

Limiting its claim to an amount equal to the shortage of fair return, the company thought if necessary only to establish minimum cost of creating going value rather than the higher figures which might have been shown by a consideration of the savings in operation and the increase in income due to the possession of going value. The company therefore submitted testimony indicating that breaking in a new organization, acquiring local experience, building the necessary records, developing the necessary schedules and meeting such realignment of property and method as might be necessary would cover a period of four or five years, and that the cost (in increased expense and decreased revenue) necessarily involved would amount to about \$6,500,000; that the supersessions which would be involved in adjusting a street railway system of this size to local conditions would reasonably be estimated at about \$3,000,000, making a total for these items of \$9,500,000.

Under the head of the development of traffic the company filed detailed maps showing the condition of the residential area surrounding the city of Baltimore as it stood just before the introduction of cable or electric lines and the same territory as it is today. The contrast was extremely striking and fully explained why these same areas in the period from 1899 to 1911 showed a constantly and steadily increasing traffic and a constantly increasing net return over and above operating expenses, taxes and depreciation. Measuring the stabilized return finally received from the lines serving these suburban areas against the total returns during the development period, the company had a very fair measure of the cost of developing these areas, amounting to \$7,000,000.

The total for these four elements is \$16,500,000. The shortage in fair return, above referred to, amounted to \$16,000,000. The company therefore presented a claim for going value of \$16,000,000.

RIGHTS-OF-WAY

A peculiar situation exists in Maryland with regard to the rights of a street car company in the streets. The original franchises granted in Baltimore City were for a period of fifteen years, renewable automatically for additional periods of fifteen years unless the municipality gave notice of its desire to purchase the property, and the act incorporating the original company provided that in event of such a purchase the city should buy all the property, including the franchises, at a fair value. Many of the franchises for operation on streets now in the city limits were granted originally by Baltimore County before the territory in question was annexed to Baltimore City, and these franchises were, almost without exception, perpetual franchises without any reserved right of repossession. Subsequent franchises granted by the city are of various types, but a very high percentage of the total right-of-way is of one or the other of the above types.

A few years after the consolidation of the various street railway companies into the United Railways a general attempt was made in Baltimore to increase the taxable basis of the city by including the street rights of the various public service corporations. The natural method would have been to place a value upon the franchises, but one peculiarity of the Maryland taxing system is that the personal property of a corporation is not assessed by the local authorities in each municipality or county, but by a state board. The local board could not assess franchises and the state board did not. The local board therefore set up a distinction between a franchise and an easement, claiming that a franchise is the mere intangible right to lay tracks in the street and, as such, admittedly personal property, but that when a company had once laid tracks in the street and started to run cars on them, or laid gas mains in the street and started to supply gas through them, it acquired, in addition to the intangible right known as the franchise, a tangible interest in the land known as an easement.

The matter was carried in three separate cases to the Court of Appeals of Maryland, the court of last resort in the state, and in every case the contention of the local taxing body was upheld. The law is therefore clearly established in Maryland that in addition to its intangible or personal franchise rights a public utility utilizing space in the city streets possesses a definite interest in real estate called an easement, classed by the Court of Appeals as property, as valuable property, and as subject to taxation.

The company therefore claimed a value for its easements based on the facts that they were not originally given to the company, but were in exchange for a valuable consideration; that the original contract provided that they should not be taken except by payment of the value at the time of taking; that their value figured largely in the price paid to the constituent roads at the time of the consolidation; that they had definitely been passed upon by the Court of Appeals of the State of Maryland as an interest in real estate, and that they had been the subject of taxation as real estate.

The valuation of the easements of the company was based upon the same general method as that used by the city of Baltimore in valuing easements for taxation purposes, and the total value for easements and private rights-of-way amounted to between \$18,000,000 and \$19,000,000.

DEPRECIATION

The company took the position that the investment to be considered as evidence of present value is the total unamortized investment, and that no deduction should be made from it for depreciation unless the inventory of property included property purchased out of a depreciation reserve contributed by the public in excess of a fair return. But in considering reproduction cost as evidence of present value, the actual physical condition of the property may properly be taken into account. For this reason the company presented detailed studies of the per cent condition of its property. The commission staff presented studies of per cent condition on certain schedules, but on others attempted to determine depreciation either by the straight line average life basis or by a combination of average life studies plus inspection. The total allowance for per cent condition shown by the company

amounted to about \$6,500,000; the total depreciation claimed by the commission staff to \$12,500,000.

PRESENT VALUE

The company took the following position as to present value:

1. That there is no definite and formal measure of present value.
2. That original cost is not indicative of value unless it has been incurred within a relatively recent period or at least within a period over which there has been relatively small change in unit costs of labor and material.
3. That the par value of securities is not in general an index of present-day value.
4. That the market value of securities, while in some cases it indicates the collective business judgment as to the total value of the property, tangible and intangible, of a corporation, is not such an index at this time when the market value of securities issued in the pre-war period is depressed on account of their low rate of return.
5. That reproduction cost is not necessarily a measure of present value, since a building or a piece of machinery may not be suited for its purpose, may not be properly located, or may not have been maintained in proper condition.
6. That whenever a piece of property is well adapted for its purpose and is serving an essential use (so that if it were non-existent some one else would be compelled practically to duplicate it) its present value differs little, if any, from its reproduction cost less such sum as may be necessary to put it in first-class operating condition.

The sum total of reproduction cost of used and useful property plus easements and going value presented by the company to the commission amounted to \$113,000,000. The company offered no direct evidence as to present fair value except the testimony of its president that the present fair value of this property was at least \$85,000,000.

The case is in the hands of the commission, which has not yet handed down an opinion. A tabulation of the comparative values found by the Public Service Commission staff and those presented by the company is given on page 71.

Oil-Electric Locomotive for Long Island Railroad

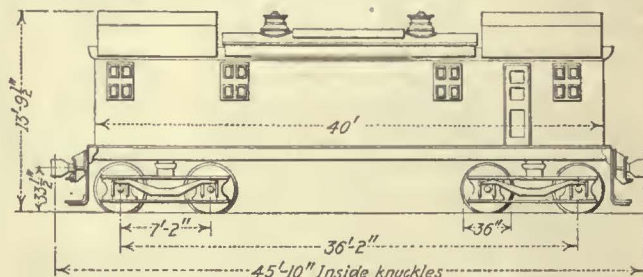
This Equipment Is Intended to Supplement Electric and Steam Equipment Now in Service and May Be Operated Over Electrified Sections of the Road

FOR switching service in its Bushwick terminal the Long Island Railroad has just purchased a 100-ton oil-electric locomotive. This locomotive has a steel box-type cab with platform carried on two four-wheel swivel trucks. The cab is divided into three compart-

ments, the central compartment containing the power plant and control apparatus, and the two end compartments for the operator.

The oil engine is furnished by the Ingersoll-Rand Company, the mechanical parts by the American Locomotive Company, and the electrical parts by the General Electric Company. Two oil engines are used. These are of the six-cylinder vertical four-cycle type with pistons of 10-in. diameter and 12-in. stroke. Each develops about 300 hp. at 600 r.p.m. Direct-connected to each oil engine is a six-pole, 600 r.p.m., direct-current, compound-wound, commutating-pole generator. A four-pole, 60-volt generator is also mounted on the same shaft as the main generator and serves to excite the field winding. A 32-volt storage battery supplies current for the exciter fields at low speed.

Four direct-current series motors of railway type G.E.-69-C are used for driving. The gearing provides a maximum allowable locomotive speed of 30 m.p.h. The control equipment is entirely automatic. With the differential winding of the generator the output in



Outline of 100-Ton Oil-Electric Locomotive to Be Operated in Switching Service by the Long Island Railroad

amperes and volts automatically adjusts itself to meet the requirements of the service and the power delivered by the engine. The only operating handle is the throttle that controls the output of the engine. An electric switch handle determines the connection of the motors in series or in parallel and for forward and reverse movement. No rheostats are used.

After the series parallel switch has been set for either forward or backward movement the throttle handle determines the power delivered by the engine. The generators and motors transmit that power to the driving wheels, automatically adjusting the proportion of tractive effort and speed to the load on the locomotive, and automatically changing these proportions to suit the varying requirements of acceleration or grade.

Auxiliary equipment includes a gasoline-engine-driven air compressor; three high-pressure air storage tanks, to be used for starting the oil engines; a water heater and expansion chamber to prevent the cooling water from freezing when the engines are not operating and for heating the operator's compartment; four fin-type radiators on the roof for cooling water from the engines; exhaust pipes and coolers on each oil engine and water tanks in the cab, into which the water may be drained in the winter when the locomotive is idle. Some of the general dimensions of the locomotive are given in an accompanying table.

Seven tower wagons of the line department of the Los Angeles Railway, Los Angeles, Cal., are being wired in the battery shop of the garage so that the red warning lights will be illuminated with electricity from the truck battery. Previously, red lanterns have been put on the towers at night.

GENERAL DIMENSIONS OF THE LONG ISLAND OIL-ELECTRIC LOCOMOTIVE

Length inside knuckles.....	45 ft. 10 in.
Length over cab	40 ft.
Height over radiator	13 ft. 9 1/2 in.
Width over all	10 ft.
Width of cab	9 ft. 4 in.
Total wheelbase	36 ft. 2 in.
Truck wheelbase	7 ft. 2 in.
Total weight	200,000 lb.
Weight per driving axle	50,000 lb.

The Readers' Forum

"Journal's" Analysis of Coffin Prize Presentation Commended

EASTERN MASSACHUSETTS STREET RAILWAY
CHELSEA, MASS., Dec. 1, 1925.

To the Editor:

The JOURNAL is to be congratulated on the excellent manner in which analysis has been made of the briefs of competing electric railways for the 1925 Coffin prize.

Each one of the briefs submitted undoubtedly dealt in detail with a great many important problems, and it is practically impossible for the industry as a whole to study all of the complete briefs. It is therefore refreshing for busy executives to gather from the pages of the JOURNAL knowledge of outstanding accomplishments in each of the six principal subdivisions upon which the award of the Charles A. Coffin Gold Medal was made.

To the mechanical man interest, of course, centers on economies in operation, and methods and practices outlined in such orderly fashion are sure to spur us on to even greater efforts. A single thought frequently serves as the basis for substantial monetary savings when applied to our own particular situation.

To the creators of the Charles A. Coffin Foundation great credit is due. They have inspired electric railway operators to put forth increasingly progressive achievements. The widespread publication of results of individual and combined accomplishments of the several competing companies is of almost equal importance to the industry as a whole. It is largely through this means that the rank and file of the industry can absorb valuable suggestions and promptly proceed to apply such new practices in their efforts better to serve transportation.

W. C. BOLT,

Superintendent Rolling Stock and Shops.

Motorman or Locomotive Engineer

MILWAUKIE, ORE., Jan. 2, 1926

To the Editor:

Interurban electric railways as a rule have sprung from street car systems. In certain respects this has been a handicap. Interurban operators are beginning to realize that it pays nowadays to get away from street railway ideas. In other words, they are copying steam road practices.

This brings up the subject of motormen. What is a motorman? Ask that question of a dozen people and probably every one would answer: a man who operates a street car. The word motorman has been associated with street cars so long that the general public thinks of only such men as operate street cars.

If an interurban electric railway dresses up a man in a blue uniform and a cap with the word "motorman" attached and places him at the controller a kind of stigma seems to hang over the railroad because of the street car idea. Why not throw away those blue uniforms and motorman badges? Allow the motorman to wear overalls and jumpers and place badges on their caps reading "engineer" or "electric locomotive engineer" instead of "motorman." It is not necessary to hire steam locomotive engineers to do this. Interurban

motormen today operate equipment that entitles them to the title "engineer." The fact that trains are operated by electricity should not be taken as an excuse to classify engineers as motormen.

Perhaps interurban operators hesitate to allow their motormen to be called engineers because of the wage question. Every motorman in heavy interurban service knows that the responsibility of a locomotive engineer rests upon his shoulders. He is not fooled by placing a motorman's badge on his cap. The Brotherhood of Locomotive Engineers recognizes motormen in heavy service as engineers and accepts them into its organization. The title "motorman" is not recognized. Most electric railroads pay their trainmen all they are financially able to pay, and the name "engineer" could not have any bearing on wages.

On the Pacific Coast there are four interurban electric roads that give the title of "engineer" to their motormen. On three of the roads the motormen wear "engineer" badges. The public never makes the mistake of referring to such roads as street car lines. In fact, they are known as railroads; even the word interurban is more or less conspicuous by its absence.

GEORGE W. BOOTH,
Electric Locomotive Engineer.

Railway Assists in Community Drive in Baltimore

THE United Railways & Electric Company, Baltimore, Md., recently had its conductors and motormen take an active part in a campaign being conducted to raise the Community Fund, a drive held to enable 29 various agencies to carry on their relief and welfare work during the coming year. The company itself gave \$6,000 to the fund and the employees gave \$7,800. But in addition officials of the company arranged to have the car crews perform an important task. On one day during the campaign more than 1,000 conductors and motormen distributed 100,000 subscription cards to passengers, making it easier for them to give and also bringing the fund forcibly to their attention. The work was done between 9 a.m. and 3:30 p.m. As each passenger passed the conductor one of the subscription cards was presented. In cases where the conductors' work was too heavy for them to give attention to the task the cards were distributed by the motormen as the passengers alighted.

Fire Gong at Railway Clubroom*

FIRE protection is assisted in a novel way in El Paso, Tex. A fire alarm gong, connected to the city fire alarm system, has been installed in the clubroom of the El Paso Electric Railway. Any fire call turned in from any point in the city is thus announced to the dispatcher on duty, who immediately calls the inspector of the division from which the alarm came and tells him the location of the fire. In this way the inspector is able immediately to investigate and call out hose jumpers and other equipment necessary to keep the cars in operation without interruption to service. The installation of this gong has enabled the railway to maintain regular headways and avoid delays in cases of fire.

*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.

Association News & Discussions

C.E.R.A. Annual Meeting at Indianapolis

ON THURSDAY and Friday, Jan. 28 and 29, the Central Electric Railway Association will hold its annual meeting at the Lincoln Hotel, Indianapolis, Ind. The session will be opened Thursday at 9:30 a.m. by the presidential address of Frank R. Coates, president of the association and president of the American Electric Railway Association.

The following program will be presented after the president's address:

Morning Session

"Electric Railways, Now and in the Future," by Britton I. Budd, president Chicago, North Shore & Milwaukee Railroad.

"Economic Trends of Interurban and Bus Service," by R. H. Pinkley, assistant general manager Milwaukee Electric Railway & Light Company.

Discussion by A. C. Blinn, vice-president and general manager Northern Ohio Traction & Light Company; R. N. Graham, manager of railways Pennsylvania-Ohio Electric Company; R. R. Smith, vice-president and general manager Chicago, South Bend & Northern Indiana Railway.

Afternoon Session

"Economics of Modern Cars," by Charles Gordon, assistant vice-president McGraw-Hill Company.

Discussion.
"Winning of Public Good Will," by L. J. DeLamar, president and general manager Grand Rapids Railway.

Discussion.
Report on Work of Master Mechanics' Association, by T. H. Nicholl, president Central Electric Railway Master Mechanics' Association.

Discussion.
Demonstration of Foremen's Conference, by Henry H. Norris, educational adviser Boston Elevated Railway.

Adjournment.

Evening Session

Annual Dinner — Indianapolis Athletic Club—Informal.

Address by Lucius S. Storrs, managing director American Electric Railway Association.

"Some Hoosier Philosophy," by W. W. Herschell.

Friday Morning Session

Report of secretary-treasurer.
Address by Miss Helen E. Steiner, director of public relations Ohio Public Service Company.

Election and installation of officers.

Speakers at New York

Association Meeting Announced

WILLIAM F. STANTON, secretary of the New York Electric Railway Association, sends word that the paper on motor bus operation and automobile competition, for which the author was not announced in the program for the convention on Jan. 27 published last week, will be by Ernest A. Murphy, general manager United Traction Company of Albany.

The title of the paper, mentioned in last week's issue, to be presented by a representative of the Cleveland Railway at the convention, is "Economic Practices of the Cleveland Railway." It will be presented by Charles H. Clark, engineer maintenance of way, and will include the exhibit of six reels of moving pictures showing economical

practices, particularly in track construction, followed by the company.

It is possible now to give the third speaker at the banquet in the evening. This is Strickland Gillilan, who has a wide reputation for witty after-dinner speaking.

The convention, as already announced, will be held at the Hotel Commodore, New York, on Wednesday, Jan. 27.

Paper on American Transport Situation Published in England

A PAPER by Walter Jackson, Mount Vernon, N. Y., on "Electric and Petrol Transport of Passengers in America" was read before the Institute of Transport, London, England, on Oct. 20, 1925, and recently reprinted from the journal of that society.

American Association News

Cleveland a Possibility for Next Convention

CLEVELAND, Ohio, is under consideration by the committee on location for the next convention of the American Electric Railway Association,

COMING MEETINGS

OF

Electric Railway and Allied Associations

Jan. 14-15 — Kentucky Association of Public Utilities, Annual Meeting, Brown Hotel, Louisville, Ky.

Jan. 20-21 — Central Electric Traffic Association, Miami Hotel, Dayton, Ohio.

Jan. 22-23 — Central Electric Railway Accountants' Association, Miami Hotel, Dayton, Ohio.

Jan. 26-29 — Society of Automotive Engineers, Annual Meeting, Detroit, Mich.

Jan. 27 — New York Electric Railway Association, Hotel Commodore, New York, N. Y.

Jan. 28-29 — Central Electric Railway Association, Lincoln Hotel, Indianapolis, Ind.

Feb. 11 — Central Electric Railway Master Mechanics' Association, Portage Hotel, Akron, Ohio.

Feb. 24-26 — Electric Railway Association of Equipment Men, Mobile, Ala.

April 13-16 — Southwestern Public Service Association, Galveston, Tex.

which is tentatively scheduled for next October. The city has excellent facilities for the purpose. The auditorium is well known as the place where the Republican national convention was held in 1924. It has two floors available for exhibit purposes, each with about 25,000 sq.ft., or a total space of 50,000 sq.ft. The appointments of the building are excellent. It was designed for exhibitions and is supplied with all facilities, including steam, gas and electricity. The lighting effect of the auditorium is considered one of the finest in this country.

Directly across the street is the armory, which also has about 50,000 sq.ft. It is suitable for the display of heavy machinery and equipment. Together the space available would be about the same as that used last year at Atlantic City.

Hotel accommodations are said to be excellent. Furthermore, Cleveland is within easy reach of the great Middle Western territory, which includes a large proportion of the electric railway and bus operations of the country.

Several members of the committee on location visited Cleveland yesterday in order to inspect the facilities available and determine whether it would meet the needs of the association. These included Chairman C. E. Morgan, Executive Secretary J. W. Welsh, Director of Exhibits F. C. J. Dell, J. H. Alexander, Morris Buck, H. J. Kenfield, J. C. McQuiston, W. C. Parker, A. L. Price, A. M. Robinson, and L. W. Shugg.

Industrial Education as Applied to Rubber Manufacturing*

BY C. S. CHING

Manager of Industrial Relations,
United States Rubber Company

THE question of training and educating employees is a mighty interesting one. Especially is this so to me in my present field of activity. It is just as important to us in the manufacturing industry as it is to the public utility. In my present connection with the United States Rubber Company, we have gone through various stages of educational work. We have gone through the stage of exposing people to certain educational courses and hoping that some of it would stick, but it doesn't work. And please don't think that I am criticising or commenting on anything that has been said here tonight, because I think that what we have just heard is a splendid exposition of educational work as applied to public utilities.

I am going to relate some of our own

*Abstract of paper presented at meeting of Metropolitan Section, American Electric Railway Association, held in New York, Dec. 11, 1925.

experiences. We have gone through a further stage of "bringing up father," in educating foremen not knowing how to go about it. We spent at one time approximately \$75,000 in buying educational courses, and exposing our foremen to them.

We then went into educational work on our own account, and the greatest success we had in training supervisory forces was in getting the people in a particular plant under the supervision of a man who knew how to prepare and write an article on a specific thing, and then after presentation of a given subject to have a lively discussion.

Please keep in mind that our problem is slightly different from yours, because we operate 53 factories in various parts of the country, some of them having 150 employees and some of them having 5,000. At the present time we maintain regular schools for the training of operators in nearly all factories. The school is apart from any other activity in the factory. The plan of our training is of course to train the operators to do better their particular jobs, but also to give them some instruction pertaining to the policy of the company, its problems and its aims. However, to my mind none of our educational courses is going to be worth anything without our having what Mr. Hass described here a minute ago as the proper relationship between the company and the employee.

We have done considerable recruiting of college men in our industry. We have done a great deal of it in the past and went too far with it. Now it may have been our fault, it may have been the fault of the organization of American industry, it may have been the fault of the man himself, or it may have been the fault of college training; but we did discover, after a while, that you can't have too many racehorses on a farm.

We found that we were getting too many college men into our factories without sufficient opportunity for those men, and believe me, you can have one real nice party when you get about 35 or 40 college men in a plant for about a year and a half and have no place to which to promote them. I don't know what we are going to do with all of the college men in the future or where there are going to be places for all of them in American industry. However, I do know this, that the average college man is not willing to look forward to a foreman's job in a rubber factory. If he does and he is satisfied with that, there is something wrong with him or his education.

We have college men as managers of our technical departments, and central laboratories, as chemists and in our selling departments. However, in the actual process of manufacturing rubber we found that we were overrun with college men and were worried to know what to do with them.

We have, I think, too much of a habit of striking a line and saying that all of the intelligence is above and all of the brawn below. There are a lot of people here tonight who have their present jobs because they were damn lucky, and there are just as good men as I am operating street cars in Boston today at the front end of the car.

Turning to our own operations, it is interesting to note that 94 per cent of our payroll is distributed in piecework. It is evident that a large part of our business is the manufacturing process.

After several lectures at Dartmouth last year, I had a talk with Harry Wellman, who is in charge of vocational training, and I asked what was the trouble with industry or with the university that we can't seem to get together. Mr. Wellman's answer was, "I'll tell you the trouble—the trouble is that you do too damn much coddling." Now there you have the opinion of a man who has been in industry and who is now in a college.

One thing that we are doing that helps our industrial situation is to take the mystery out of business. There wasn't any mystery in it to begin with, but a lot of people thought so. The company takes its operating statements, analyzes them, pares them down to their elements, and explains them in the light of each department's activities. Every workman knows in simplified terms what the company is doing and the relation of his work to the company.

We have a system in one of our plants which is one of the most effective I know of, whereby every day a record of each individual department, together with a complete record of the production of the plant, is put on the blackboard every morning by the foreman, and everybody watches it and notes the percentage of waste. We display everything we possibly can relating to the operation and to the cost of production in dollars and cents. In one department the mere posting of the amount of waste of one expensive material resulted in a marked decrease in this waste the following week.

Now I believe our big task is to try to convince our own people of the problem at hand. It is becoming more and more a problem for American industry how to best utilize the man from the neck up and not the rest of him. If we are going to get anywhere in our industries that is what we have to do. We must make the machine and power accomplish our manufacturing, and manpower should be used to build the machine and to guide its work.

Promotional Work as Practiced by the Brooklyn Edison Company*

R. V. RICKCORD

Manager Personnel Service Department,
Brooklyn Edison Company

MOST of us who have been in contact with public utilities for any length of time, and certainly with men like Matthew F. Sloan, Henry L. Doherty and Mr. Menden and a few other big men, cannot be in their presence very long without feeling that terrific driving spirit of service. Only by close contact with these men is the realization driven home that the giving of high-grade service is a serious problem and requires tremendous effort all the time to accomplish results.

*Abstract of paper presented at meeting of Metropolitan Section, American Electric Railway Association, held in New York, Dec. 11, 1925.

An important aid in the development of employees capable of furnishing the high standard of service required by these leaders is the diversified educational work practiced by many companies.

In the promotional and educational work conducted among our employees the clerical and sales employees are enabled to take the commercial courses and the technical employees the technical subjects, and the trade employees have available certain technical classes in addition to the training offered to develop skill in the trade itself. For instance, we have a school for linemen, another for cable splicers and still another for meter testers. For supervisors of various departments we have a complete course of conferences. In order to train new employees we have a course for cadet engineers in which we give specific, properly supervised work in the several departments of the company and a certain amount of specific research work accompanied by periodic lectures on the latest developments in the company.

To augment the work of the technical employees and the cadet engineers, the company has constructed and has maintained extensive laboratories equipped with different kinds of machines in which series of tests are made in many ways similar to the electrical laboratories maintained in the universities. An attempt is always made to emphasize the practical application of the technical subjects as they affect the specific work of our company.

[Note—The paper was well illustrated by a number of slides showing the organization of the educational work, the class rooms and laboratories.—EDITOR.]

Special Reports Available

FOLLOWING is a list of special reports that have been prepared by the bureau of information and service of the American Electric Railway Association. These reports are available to member companies upon request:

Bulletin No. 59. Wages of Employees Other Than the Trainmen. Gives for about 225 companies a classification of employees and the wages paid each class in the shop, barn, way and structures, power, overhead line and storage departments. Also shows the number of hours worked weekly, the average weekly wages earned, overtime rates, and number of employees in each department.

Bulletin No. 60. Electric Railway Financing in 1925. A list of new securities issued in 1925 showing the type of securities, the amount issued, the surety date, interest rate and offering price. The bulletin also contains a summary of securities defaulted, retired or refunded during the year, the securities of companies abandoned, and a statement of the net change of electric railway capitalization during the year.

Bulletin No. 61. Trend of Material Prices. A new edition of the association's compilation bringing down to date the trend of prices of materials used by electric railways as furnished by the manufacturers of those materials.

Bulletin No. 62. Electric Railway Fares in Cities Over 25,000 Population. Gives a brief record of recent fare history in each of the American cities of 25,000 population or more, arranged alphabetically. It is preceded by a summary showing the number of these cities operating at each rate of fare during the years 1917 to 1925 inclusive, with a chart showing the distribution and trend of fares during the same period.

In addition to the above, supplements to the Fare Bulletin, Wage Bulletin, Bus Wage Bulletin and Cost of Living Studies (Bulletin No. 63) have been prepared bringing them down to date.

Maintenance of Equipment

Filling Cracks in Concrete Pavement*

DEVELOPMENT of cracks and the subsequent frost action from moisture getting into the cracks and breaking up the surface of the pavement is the major trouble experienced by the Denver Tramway, Denver, Col., in connection with concrete pavement. This class of trouble has been entirely eliminated by use of a special method of filling in the cracks. Compressed air with a nozzle pressure of 80-lb. per square inch is used for cleaning out the cracks, and the surface is then painted with a special concrete primer paint of a highly penetrating nature. The paint consists of a solution of asphalt and a light petroleum oil. This primer coat dries rapidly and as soon as it is dry a hot asphalt of a special nature is poured into the cracks.

Prior to adopting this practice two difficulties had been encountered in the maintenance of concrete paving. The first of these was that it was found almost impossible to make any asphaltic material that was poured into the cracks hot adhere to the concrete for any length of time. This difficulty was solved by the ap-

*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.

plication of the primer paint, which bonds the tar or asphalt. The second difficulty was from the slight movement which takes place in the concrete during the winter months. This broke the asphaltic material filler. This latter difficulty was solved by the use of the material known as soft Allenite, which retains its plasticity during extremely low temperatures.

Two men operate the equipment for doing this work. The equipment consists of a Ford 1-ton truck with body, an air compressor and a tar kettle. These are all linked up so as to move as a unit.

Such supplies as paint, Allenite, kindling wood, red flags, and other tools are carried on the 1-ton Ford truck. The air compressor is electric-driven, taking current from the trolley wire. Hose 150 ft. long with a special $\frac{1}{4}$ -in. nozzle is used to blow dirt out of the cracks. A pyrothermometer is used to determine when the Allenite is heated to proper temperature.

The same equipment is used also on reconstruction work that is to be paved, in order to waterproof the construction joints on each side of the track between the company's paving and that placed by contractors for the city. The maintenance of joints between the city's dummy strip and the car track concrete has been reduced materially by the insertion

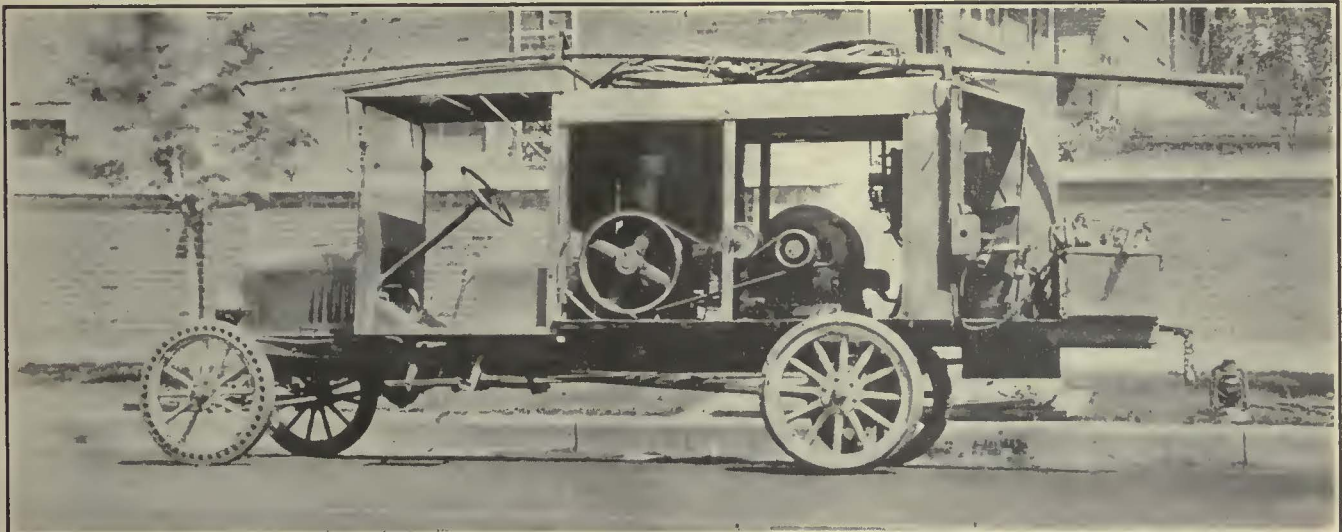
of asphaltic joint filler, which keeps the concrete surface from becoming abraded as cars pass over the track.

Night Inspection of Trolley Wire*

SEVERAL years ago the Northern Texas Traction Company was having many trolley wire breaks on its city lines. In 1921 there were 313 breaks, or an average of approximately one break per day. At times there have been as many as twelve trolley wire breaks in a single day. In an attempt to decrease such interruptions to service a system was devised whereby a line crew would be available at night for inspection duty. Prior to the inauguration of this inspection schedule the night crew did nothing but stand by in case of trouble. This crew consisted of one truck driver and one lineman, together with a 1-ton Ford tower truck.

For the night inspection work a spotlight was placed on top of the tower. The lineman on this inspection truck stayed up on the tower while the truck was driven slowly under the overhead so that the lineman could inspect the hangers, ears, sleeves, frogs and trolley wire. Parts

*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.



Electric-Driven Air Compressor Mounted on Ford Truck

reported by the night crew were repaired by the day line crew.

After this night inspection was undertaken it was found possible for the crew to go over the line at least once a week. It was left to this crew to see that flaws in the overhead were reported before a break occurred, and if a break occurred soon after an inspection had been made it reflected on the efficiency of the night crew. As a result of this work the total trolley breaks on the entire system of overhead construction have steadily decreased from 313 breaks in 1921 to six breaks for the first six months of 1925.

Rolling Scaffolds Used for Building Maintenance

ONE of the distinctive features embodied in the design of the recently completed Everett shops of the Boston Elevated Railway is the large amount of window space. The walls of the buildings consist chiefly of brick columns with large window areas between. Along the entire length of the roof of each building is a skylight. These large glazed areas have created a problem in building maintenance because much of the sash and glass is not readily accessible for painting and repair. To solve this problem rolling scaffolds of the type shown in accompanying illustrations have been provided. These scaffolds are simple iron frameworks supported on wheels which follow a track running around three sides of the building.

Because the fourth side opens onto the transfer table runway and is provided with doors for all tracks it has small window space and the scaffolds are not used there. A somewhat similar scaffold has been arranged for each skylight. It is expected that the time required for repainting sash and repairing glass will be much reduced as a result of the installation of these scaffolds.

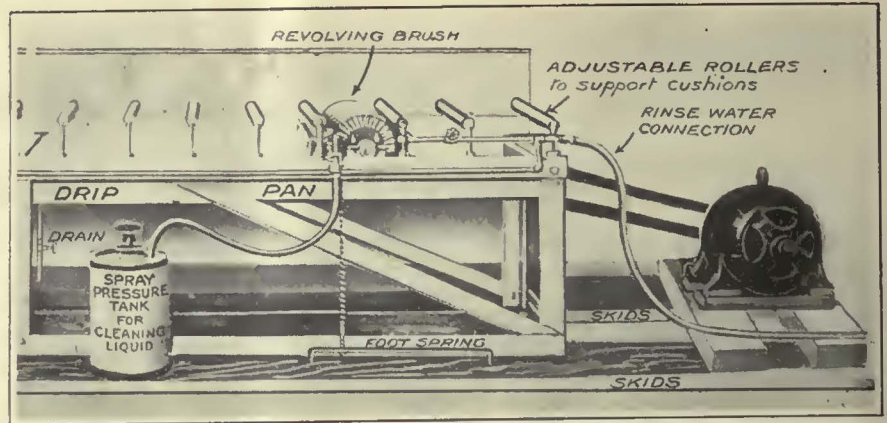
Machine for Cleaning Cane Seats

DURING periods of overhauling it is very desirable to clean the surface of cane seats and backs. The Richmond Light & Railroad Company, New York, N. Y., has recently installed a machine manufactured by the Wilson-Imperial Company of Newark, N. J., which is illustrated

in the accompanying view. The cane seats and backs when removed are moved back and forth on the table consisting of a series of rollers and the wire brush, which is revolved by the motor and cleans the seats with the aid of the special cleaner supplied by the manufacturing company.

The cleaner is placed in a tank under pressure and is applied across the surface of the brush from the pressure tank by means of the pedal. When the seat has been cleaned, the dirt and surplus cleaner is flushed off by turning on the rinsing water connection. The excess material falls in the tray below and is drained away.

While this material can be used by means of a hand brush the capacity of the machine process is much larger, since one man can clean the seats of several cars in the course of a day.



Single Brush Cleaner Used by Richmond Light & Railroad to Clean Cane Seats When Cars Are Overhauled



Scaffold Suspended from Rollers on Overhead Track Is Useful in Building Maintenance



Skylight Scaffold Used at Everett Shops of Boston Elevated Railway

New Equipment Available

Extremely Sensitive Bond Tester Produced

SEVERAL outstanding features have been incorporated in a new bond tester just announced by the Roller-Smith Company, New York, N. Y. The new tester is more than five times as sensitive as the most sensitive instrument hitherto produced by the company for this work. This enhanced sensibility permits the use of a single No. 6 dry cell as the source of rail current.

One of the first essentials in testing rail bonds is sufficient current in



New BBT Type Bond Tester

the rail to actuate the bond tester. The method of measurement most commonly used is based on a comparison of the drop through the bond with the drop across a definite length of rail. On busy city lines there is usually a sufficient number of cars in service to provide the current necessary for bond testing, but on new construction, on interurban lines and at the ends of long lines it frequently becomes necessary to

make special provisions in order to secure the needed rail current.

Various expedients have been used for this purpose, such as a portable storage battery, grid and other resistances, and in some cases special cars carrying motor-generator sets. All of these have the disadvantage that they include extra equipment which may be costly to operate and rapid testing cannot be made.

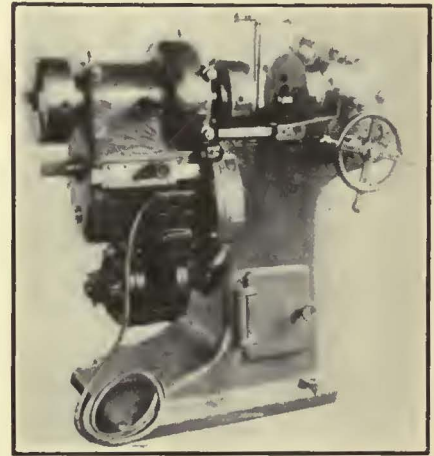
By providing an extremely sensitive instrument, the difficulty of a supply of rail current is overcome in the new Roller-Smith bond tester. Referring to an accompanying illustration, which shows the special contact bar used with the new BBT instrument, it will be noted that the dry cell is mounted in a bracket carried on the upright members. Built-in connections run from the dry cell to the rail contacts at the extreme end of the horizontal members. A foot-operated push switch is interposed in the battery circuit, which is located just to the side of the upright members. The center rail contact and one of the adjacent contacts span the bond, while the center contact and the one at the other end span 3 ft. of rail. When all is ready, the contact bond is dropped on the rail and the bar is run back and forth a few times so that the saw-blade contacts will bite into the rail head. The battery switch is then depressed with the foot and a reading is taken. The manually operated needle is rotated until the small galvanometer needle is at zero. The large pointer then indicates the resistance of the bond direct in units of foot of rail length.

Of course, where the normal rail current is adequate, the dry cell need

not be used. The latter, however, is small in size and does not increase the weight materially.

Portable Pipe-Threading Machine

DESIGNED to meet all pipe-threading requirements, but with wheel mounting so that it is portable, a new power pipe-threading machine has been placed on the market by the Chicago Pipethread Machine Company, Racine, Wis. The machine will thread pipe from 1/4 in. to 2 in. diameter and can also be used to thread rods and bolts. Three speeds are obtained through sliding gears and lever control. A clutch for starting and stopping the ma-



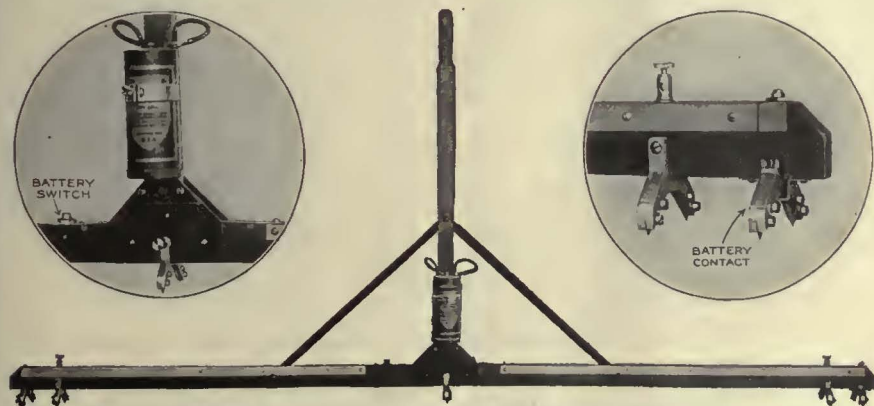
Pipe-Threading Machine with New Features

chine is located on the spindle. All gears are machine cut and run in oil.

At the rear of the die head is located the cut-off attachment, which is extra heavy. All sliding parts are accurately machined and gibbed to prevent vibration. The reaming tool is mounted on the cut-off block and is actuated by turning the handle toward the center of the machine after the cut. This can be accomplished without changing the location of the die head.

The spindle is of heavy construction with a hole large enough to pass the coupling. Chucks are mounted on each end, the front chuck being equipped with pipe-holding jaws, while the rear chuck is only a centering device for holding long lengths of pipe. Gripping chucks can be applied at both ends if desired. The spindle runs in large bearings that are replaceable when worn.

An oil pump of the centrifugal type is provided which runs at 1,800 r.p.m. It is located at the lowest level of the reservoir. The oil reservoir is located in the pedestal base.



At Left, the Dry Cell is Mounted on the Center Upright. In Center, Special Contact Bar Used in the Bond Tester. At Right, Saw-Blade Contacts Bite Into the Rail

The News of the Industry

Rapid Transit Suggestions at Boston

Recommendations Made to Legislature Wants Steam Lines and "L" to Co-ordinate Service

A planning board of which Henry I. Harriman is chairman has reported to the Massachusetts Legislature on desired future developments of the rapid transit system for Boston. It proposes an eventual co-ordination of the Boston Elevated Railway with the steam railroads which enter Boston, but says that this calls for another year of careful study and asks for an extension of time to Jan. 1, 1927.

For the present the board recommends that the Chelsea division of the Eastern Massachusetts Street Railway be added to the Boston Elevated and the service given by the Elevated. It says that the Elevated should not be required to buy it, neither should the city of Boston finance it; but the state should buy the Chelsea division and lease it to the Elevated.

THREE SPECIFIC RECOMMENDATIONS

Three specific recommendations along this line are made, as follows:

1. For the acquisition of the Chelsea division of the Eastern Massachusetts Street Railway by the Boston Elevated Railway.
2. For the assessment of betterments in connection with future rapid transit extensions.
3. For the construction of rapid transit lines outside of the city of Boston by or under the supervision of the Department of Public Utilities.

Further the board makes suggestions for studies for future extensions of rapid transit for Metropolitan Boston. Among other things it concludes:

1. That most of the subways now used by trolley cars and the viaduct to Lechmere Square should at an early date be equipped with trains as parts of through rapid transit routes.
2. That all rapid transit routes should, if possible, be through routes without dead-end terminals in the heart of the city, thus giving a wide distribution of passengers in the downtown section and avoiding excessive congestion at any station.
3. That new subway stations should have a platform length of from 450 ft. to 500 ft. Such platforms will accommodate either a ten-car East Boston Tunnel train or a six-car Cambridge Subway train.
4. That reserved ways in certain avenues may properly be used in part for rapid transit trains.
5. That wherever possible rapid transit lines should utilize or parallel existing steam tracks, thus avoiding expensive subway construction.
6. That terminals of rapid transit lines should in most instances be located from 3 to 4 miles from the State House. Approximately half of the population of the metropolitan area lives within a 4-mile circle of the State House, and the bulk of the suburban traffic originating beyond the 4-mile limit uses railroad rather than Elevated service. It will thus be seen that if rapid transit terminals are located from 3 to 4 miles from the State House rapid transit service will directly serve a very substantial proportion of the city's population, and the number of passengers who must change at terminals will be greatly reduced. The Harvard Square and Everett

terminals are almost exactly 3 miles from the State House. The present Forest Hills terminal and the new terminal of the Dorchester Subway are or will be about 4 miles out.

7. That wherever it is feasible to do so betterments should be assessed upon private property to pay for a part of the cost of rapid transit extensions. There can be no doubt that rapid transit service adds greatly to the value of much nearby property; and this division can see no reason why property that is benefited should not pay a reasonable betterment assessment and thus lessen the financial burden of the car rider.

Ultimately the following rapid transit extensions will be needed, according to the board:

1. Out Commonwealth Avenue to the Brighton district.
2. Out Beacon Street to Brookline.
3. Out Huntington Avenue to Brookline.
4. An extension through Lechmers Square and Somerville to North Cambridge.
5. An extension from the Everett terminal to Malden.
6. An extension of the present East Boston Tunnel to Revere or Chelsea or both.
7. Out parallel to the Midland Division to Dorchester.

New Year Starts Well in Twin Cities

Patrons in Minneapolis and St. Paul Accept Fare Advance Gracefully—Story of Terms of Settlement Reviewed Briefly—Company Has More than 100 Buses

RESIDENTS of Minneapolis and St. Paul met with equanimity the higher rate of fare in the Twin Cities ordered for Jan. 1, 1926, by the Minnesota Railroad and Warehouse Commission. The public and the press alike admit that the fare of 8 cents cash with six tokens for 40 cents appears to be necessary to return 7½ per cent upon the valuation as agreed.

The reason for this reaction is not far to seek. After several years the controversies with the Minneapolis Street Railway and the St. Paul City Railway are over, the expensive litigation at an end and employment of experts in valuation proceedings is stopped. As President Horace Lowry of the railways has said:

We are now on a cost-of-service basis, which is the only way by which the interests of the public and the companies can be protected and a high state of service maintained.

St. Paul is well satisfied inasmuch as a higher rate would be required in that city than in Minneapolis because of the difference in cost of operation, amount of travel and extra high assessments by the city. These assessments, however, are likely to be reduced by the city upon petition by the railroad and upon suggestion by the commission. Were the company's taxes in Minneapolis reduced to a 4 per cent basis of gross earnings, as applied to telephone companies, the reduction in taxes would be \$352,000 a year. This would of course affect fares favorably.

Up to and through the war period Twin City passengers paid 5 cents flat. Later this was raised to 6 cents flat. This was changed to 8 cents cash and ten tokens for 60 cents by an emergency order by the commission made on July 3, and effective Aug. 1 for a test of six months. About 10 per cent of the passengers have paid 8 cents. The commission now finds the estimate of the probable number of cash passengers was wrong.

Meanwhile, after the question of fare determination had reached the federal

court, a proposal presented by Mr. Lowry suggesting a compromise was accepted by both cities. This agreement took into account the property valuations made by the commission as of Jan. 1, 1925, as a time saver, leaving for future consideration any necessary changes to bring these up to date. Application was made to the commission for a permanent rate and on Dec. 22 that body ordered for both cities a fare effective Jan. 1, 1926, of 8 cents cash, as now, and six tokens for 40 cents.

The order affecting St. Paul finds the company, on the basis of operating expenses for 1925, should have had a fare of 7.14 cents a passenger.

NEW RATE AVERAGES 6.8 CENTS

The average new rate of fare is 6.8 cents, the average asked by the city was 6.65 cents and by the company 6.92 cents. It will be seen that the rate fixed by the commission is between the city and company figures. The commission estimated that an average fare of 6.91 cents is needed to return 7½ per cent on the stipulated valuations of \$26,787,228 in Minneapolis and \$16,196,090 in St. Paul, but the commission says on this point:

We have the assurance that all the earnings of the Twin City Motor Bus Company, which, like the railways, is a subsidiary of the Twin City Rapid Transit Company, in excess of 7½ per cent will be divided between the railways of Minneapolis and St. Paul. This excess is expected to bring a substantial revenue to the car lines.

Calculations by the commission necessarily were made partly upon estimates of operating expenses for the two lines to complete the figures for 1925. The companies recently increased the wages of trainmen and also added service at rush hours, which made an increase not expected when negotiations were begun for the new rate.

There was a matter of increased freight on coal, which later was adjusted by the companies.

Total operating expenses in Minneapolis before and after taxes for 1925 were determined thus:

Railway operating expenses estimated, 1925 after 1925 adjustments, before taxes.....	\$5,109,967
Further adjustments for 1926, 60 additional trainmen, starters and inspectors.....	66,807
Increased service proposed, 459,000 car-miles.....	84,134
Increase of 2 cents an hour per trainman	81,149
Way and structural equipment expense, adjustments to make estimate conform with company estimates for 1926.....	25,187
Reduction on law and valuation expense from total of \$65,599 to \$50,000	-15,599
	\$5,351,645
Taxes assignable to railway operations	847,675
Total operating expenses and taxes	\$6,199,320

The tax rate has been increased from 69.16 to 73.37 per \$1,000, assessed valuation increasing the local taxes to be paid in 1926 by the company \$35,543 over 1925. This makes the assessment against the Minneapolis Street Railway 10.4 per cent of gross revenues in 1925 if there is no change in the federal income tax. The commission says that since this percentage of gross revenue is 50 per cent greater than the average taxes paid by electric railways of the United States in 1924, with the \$35,543 increase and local taxes and state taxes for 1925, these taxes will be \$652,932, including federal income tax. This amounts to about 8.7 per cent of the gross revenues estimated for 1925.

In regard to the St. Paul case the commission said:

The fare which we have this date fixed, which will yield to the Minneapolis Street Railway a reasonable return on the fair value of the railway property within the city of Minneapolis, we therefore fix and establish for St. Paul.

It was expressly stated there should be no change in the transfer privileges. It was also incorporated in the Minneapolis order that the Fort Snelling reservation comes within the one-fare limit from Minneapolis.

Although the Twin City Rapid Transit Company, operating the Minneapolis Street Railway and the St. Paul City Railway, was permitted in the final decision to redeem the outstanding tokens Jan. 1, 1926, at 6 cents, the company made no announcement of its intentions until late Dec. 31, and from that time until midnight the conductors were swamped with purchasers at the old rate. It is estimated the company stands to lose \$17,000 by this friendly act. At least 2,500,000 tokens were still out on Jan. 1. Where tokens were unavailable patrons were instructed to pay 6 cents cash fare until midnight, the company waiving the extra 2 cents cash because it was unable to supply the demand.

Through the dissolving of an injunction brought by a stockholder of the Minneapolis & St. Paul Bus Line, Inc., against the sale of that property to the Twin City Rapid Transit Company, the railway will acquire the remaining independent bus line between Minneapolis and St. Paul. It operates through the University and Como Park districts of the two cities. This line has twelve modern buses. The purchase price is reported to be \$105,000. Acquisition of this bus line will give the railway 100 buses.

In addition the Twin City Rapid Transit Company operates through a

subsidiary the Twin City Motor Bus line between Minneapolis and St. Paul, the American Auto Bus Company line between St. Paul and Minneapolis and suburbs and the Intercity Transportation Company between St. Paul and Stillwater.

What Basis, Fares at Detroit

The matter of increases in fare at Detroit, Mich., has not been formally presented to the Street Railway Commission, but the subject is being studied by the commission's engineers. The present rate of fare in Detroit is 6 cents cash with nine tickets for 50 cents and an additional charge of 1 cent for a transfer. Extending service to Redford, which has recently been annexed to Detroit, will call for considerable increase in the length of haul on the Grand River car line.

The questions under consideration relate to the adoption of the zone system of charging fares commensurate with the length of hauls or keeping the fare uniform and raising it to cover the increased cost of the longer hauls. The justice of raising fares all over the city to pay for carrying passengers to the newly annexed districts is being considered with the alternative of each passenger paying for the ride he takes.

Col. H. U. Wallace, general manager of the Department of Street Railways, said recently:

I am certain that, so far as present services are concerned, there will be no increases. What we have to do is face the question of long haulage to recently annexed territories, such as Redford.

We propose to establish a bus service to Redford about next June and we have under investigation the question whether we can make this extension and meet the expense out of general revenue; whether we should make this individual service self-supporting, and whether it would be fair to saddle car riders in general with any deficit that might be met in operating this service. None of these questions has been decided.

But there will be no increase in fares so far as present car riders are concerned. On the contrary, the department is planning to meet all expenditures, most of which should be capital, out of revenue. Our budget of next year calls for about \$1,500,000 outlay, but this will be met by earnings.

We are paying the Detroit United Railway 25 per cent of our profits to amortize its debt. That is a real achievement in the history of municipal ownership. In another six years we shall have fully met that obligation and the money then will be available for improvements and possibly for fare reductions. Our problem is to hang on for six years, give adequate service and at the same time incur no further obligations.

That we are aiming to do. We hope to take care of maintenance, repairs, sinking fund charges and operating expenses out of revenue derived from a 6-cent fare. We hope to make adequate improvements out of the same revenue. If we can do this for the next six years we shall have made the department pay for itself. After that we shall be free to improve the service considerably and possibly reduce fares.

Mr. Storrs Outlines Progress for the Press

Lucius S. Storrs, managing director of the American Electric Railway Association, says that 1925 was marked by distinct progress in the local transportation industry. In a statement which he made to the daily press in the interest of the industry Mr. Storrs said electric car and bus service is being rapidly co-ordinated under single managements in most communities, electric lines are being modernized, credit is being slowly restored, and the public, realizing the necessity for good

common carrier service under responsible electric railway agencies, is showing an increasing desire to work with local managements in solving current problems.

He explained that the initial efforts of the Advisory Council have been directed toward effecting sensible co-ordination and modernizing properties and thus improving credit. Useless competition, resulting in duplicated service and doubled and tripled fares, is being supplanted by community-wide service under single managements operating economically. More than 250 electric railways now are operating bus service with some 5,000 vehicles over about 12,000 miles of route. This represents an increase over 1924 of 80 operating companies, a doubled number of buses and tripled miles of service. Mr. Storrs explained that the importance of this changed situation is not so much in miles of added service as in the recognition of managements that they no longer are merely rail operators, but general transportation agencies ready to render service by any useful vehicle the public demands.

The local transportation situation as leaders see it was summarized by Mr. Storrs as follows:

A demand for good transportation, both by electric car and motor carriers, exists. It is the duty of electric railway companies, as the oldest and most reliable transportation agencies, to supply this transportation. They will supply it with the most modern equipment as rapidly as possible.

Franchise Negotiations at Richmond Halted

Luke C. Bradley, president of the Virginia Electric & Power Company, Richmond, Va., expressed regret at the present halt in negotiations to obtain a blanket traction franchise because of provisions required of the company by the streets committee of the City Council. He regards the terms sought to be imposed as excessive. The committee proposed to recommend a 5 per cent tax on gross receipts and the removal of toll charges on the company's viaducts, but sought to require the company to continue paving between tracks. Mr. Bradley said:

We do not feel that it is fair to the company nor to the car rider that the city impose on them over and above what it imposes on any other individual or corporation a gross earnings tax, which can tend only to stifle a proper expansion of Richmond's transportation facilities and make the cost of fares to the car rider more expensive.

No Jitneys in Savannah

There are no more jitneys now in the city of Savannah, Ga. The one remaining line there ceased operating on Dec. 31, 1925. The regulatory ordinance passed in May designated Oct. 1 as the last day the jitneys would operate. The jitney people took this matter to the courts and they were allowed under a temporary injunction to operate until their 1925 licenses expired. The city took the matter to the Supreme Court of Georgia hoping to get a decision before the year was out. However, the Supreme Court has up to this time handed down no decision. The theory as to their right to operate the balance of the year was confined to their licenses having been issued for the full year. The licenses, however, have now expired.

Transportation Committees of Springfield and Worcester Meet

Two joint committees, composed of civic representatives, officials of the Springfield and Worcester properties, and representatives of the New York, New Haven & Hartford Railroad, were recently formed and initial meetings of each have been held.

In Springfield the Board of Survey, composed of Clark V. Wood, president of the Springfield Street Railway, and W. J. Flickinger, vice-president of the Connecticut Company, now under the management of the New York, New Haven & Hartford Railroad, met for the first time on Jan. 5 and secured considerable data from the city traffic expert, J. T. B. Woodruff, who will assist the committee in its investigation. Primarily, the findings of this committee and the traffic expert will form the basis of a report on transportation in Springfield. Coincidentally in Worcester, Mayor O'Hara and President R. L. Whipple of the Chamber of Commerce have appointed the following committee to study the Worcester transportation situation: William C. Mellish, city solicitor; Prof. Albert S. Richey, Worcester Polytechnic Institute, and F. H. Willard, vice-president and general manager Worcester Consolidated Street Railway. These men will confer with Clark V. Wood, president of both the Worcester Consolidated Street Railway and the Springfield Street Railway, and W. J. Flickinger, vice-president of the Connecticut Company, who represents the New Haven interests. This committee has been authorized to study the railway situation in Worcester. It will start its work immediately.

All of this work has a direct bearing on the possible rehabilitation of both of these properties by the New Haven Railroad. Certain legislation will have to be accomplished before it will be legally possible for the New Haven to re-establish its interest in these properties. The New Haven naturally desires the co-operation of the two cities in obtaining this legislation and has therefore been instrumental in the formation of these committees to study the situation and determine whether the cities wish to go on as now or prefer to have the New Haven exercise control and rehabilitate the properties.

Fare Increase Sought at Albany

It is said that a modified petition for an increased fare, specifying no amount, but asking a "fare rate," will be presented to the city officials of Albany, Troy, Rensselaer and Cohoes by the United Traction Company. In its petition, the company will say that after operating buses in Albany and Troy as feeders for its main lines, it has been found the company with the present 7-cent fare still will suffer a shortage of approximately \$300,000 for the twelve months ended Dec. 31.

Ernest Murphy, superintendent of the company, is reported to have said that the company will first seek relief from Common Council of Albany, and if that fails, will file a fare petition with the Public Service Commission. A petition for a 10-cent fare, filed a year ago,

was temporarily withdrawn when the city of Albany granted the company a franchise to operate buses in Western Avenue and to the Arbor Hill section, suggesting that further action be delayed pending actual experience from revenues derived from the feeder lines.

Result of Ontario Elections

Hamilton Abandonment Averted—St. Thomas to Have Buses—London in Deadlock

Residents of Hamilton, Ont., were able to indulge in the usual holiday merriment because the expected abandonment of service by the Hamilton Street Railway was averted for about five weeks. At practically the last moment the company agreed to accept the city's proposal to negotiate for a new agreement and to submit the agreement to the voters on Feb. 11. The possible suspension and eleventh hour avoidance of it were brought about by the defeat of the two railway by-laws on Dec. 7, referred to in the *ELECTRIC RAILWAY JOURNAL*, issue of Dec. 12, 1925, page 1048. The people opposed the city's purchasing the system and also opposed the company's receiving a 25-year franchise.

To insure continued service the City Council on Dec. 9 approved a plan to submit a new agreement to the people within 60 days. The Council's action does not mean that the city has withdrawn the application of Dec. 8 to the Ontario Railway Board to operate the street railway. This application will merely be held in abeyance pending negotiations with the company. Should the city and the company fail to reach an agreement, meriting another vote of the people, then the Council will halt such negotiations and call upon the Railway Board to act.

The terms under which the company and city agree to carry on for 60 days are:

1. That the city enter into an agreement with the company and forego its percentage and mileage charges during the period in question.
2. That the Board of Control and the Civic Street Railway Committee be authorized to negotiate with the company respecting a new agreement to be submitted to the electors prior to Feb. 11, 1926.
3. That the Board of Police Commissioners be requested not to issue any additional jitney licenses from Dec. 11 until Feb. 11.

The defeat of the by-laws in Hamilton was a surprise. Only a few days previous to the vote the Hamilton Street Railway had consented to revise the proposed franchise agreement by giving the city the right, at the close of any five-year period, to purchase the system upon certain conditions. This condition had been accepted by the Board of Control and street railway committee of the Council. The company's original stipulation was that one year's notice of purchase would be required and that the purchase price would be 10 per cent more than the valuation of the company's assets. It voluntarily went further than that, submitting instead of a straight 10 per cent bonus demand a sliding scale which reduces the bonus percentage at stated periods in the life of the agreement.

The company had advised the city

authorities verbally on Sept. 30, and formally on Nov. 3, through the press, that unless some workable agreement was reached, it would have to cease operation.

The latest development in the London situation reveals that the London Street Railway has been allowed a 5-cent fare for 60 days pending a new agreement. However, the City Council on Dec. 30 refused the company's application to order the independent buses off the streets and service has been terminated. The London Council has issued an ultimatum to the company to define its plans within forty-eight hours. The immediate trouble in London dates back to Dec. 12, when the Ontario Railway and Municipal Board issued an order requiring the company to revert to the old rate of fares, seven tickets for a quarter good between certain hours and nine for a quarter good between other hours. In London, as in Hamilton, abandonment was averted at the busiest time of the year by the announcement of a special meeting of the City Council called in an endeavor to have the railway continue until a new franchise could be discussed. Later reports stated that the London Street Railway at a special meeting of the finance committee of the City Council would lay a proposal before that body for a complete service of street cars and buses with slightly higher fare and universal transfers.

In St. Thomas, another city of Ontario, the trolleys are to cease operating on March 1. At the wind-up meeting of the 1925 City Council the by-laws carried at the election on Dec. 7 discontinuing the railway and accepting a bus transportation proposition were read for the third time and formally passed. The contract with the bus company provides that the new system will come into operation within 60 days of the signing of the contract. The St. Thomas Municipal Street Railway operated 6.5 miles of line.

Detroit United Adds Cars to Combat Buses

The Detroit United Railway, Detroit, Mich., has added ten interurban cars on Detroit-Royal Oak division on a fifteen-minute schedule. The previous schedule was 20 to 30 minutes. The Detroit Motor Bus Company has petitioned the Public Utilities Commission to operate buses on fifteen to twenty-minute schedule between Detroit and Pontiac and D. U. R.'s action is seen as an attempt to combat bus competition.

Agreement Among St. Louis Holders

Security holders of the United Railways, St. Louis, Mo., have reached a complete agreement on terms for the reorganization of the system. Federal Judge Faris of the Eastern District of Missouri was so informed on Jan. 5. A termination of the receivership of the company is anticipated within a reasonably short time. The court continued until Feb. 15 the hearing of the consolidated foreclosure suits brought against the property under which the receivership will be dissolved.

Fare in Spokane to Be Contested

Despite reports generally accepted that the City Commissioners of Spokane, Wash., would not contest the new street car rates filed with the State Department of Public Works of Washington by the Spokane United Railways, the City Council voted unanimously on Dec. 30 to protest the fare increase.

Charles A. Fleming, Mayor, and James M. Geraghty, corporation counsel, were authorized and instructed to oppose the increase, at a hearing to be held in Spokane about Jan. 15. Previously, officials of the Department of Public Works announced they had been told the United Railways and the Spokane City Commissioners had agreed upon the new fare of 10 cents cash with five tickets for 35 cents, which was to become effective on Feb. 1.

Intensive Development Planned in San Francisco

Samuel Kahn, new executive head of Market Street Railway, San Francisco, Cal., now under H. M. Byllesby & Company's control through United Railway Investment Company and its subsidiary, California Railway & Power Corporation, says it is the Byllesby purpose to continue to operate the lines in accordance with the best public utility practice and also to continue their development. He is reported to have said:

It is our purpose to protect our investment here by efficient operation and by taking the public into our confidence. We are entertaining no plan nor are we contemplating any step toward attempted sale of the properties to the city.

Mr. Kahn denies reports that the company will campaign for increased fares and that it is proposing a bond refunding operation.

Since Byllesby interests have obtained control of the Market Street Railway, a compromise has been effected with the Pacific Gas & Electric Company over litigation which resulted when the tram company sued to enjoin the power company from collecting \$420,000 on increased rates granted by the Railroad Commission of California in 1921. The petition for dismissal of the suit has been heard in the Circuit Court of Appeals.

Referendum in Jacksonville

Voters of Jacksonville, Fla., will decide at a referendum in March whether or not the city will acquire the Jacksonville Traction Company by purchase and then operate the road. A decision to this effect was rendered by the City Council on Dec. 22, 1925, when Councilman P. A. Holt introduced a resolution providing for a vote on the matter that has been agitated for some time.

The Holt resolution refers to "the crowded condition and congestion of the street car traffic" and "the confessed inability of the company to remedy the situation" with the consequent necessity for some definite plan of procedure. One of two plans will be adopted. Either the city will take over and operate the property or a franchise will be granted to the present company or to some other company. The resolution further stated that it would be neces-

sary, if the city decided to take over the property, for the Legislature to pass an enabling act and that it was unfair to delay action until conditions became intolerable.

A Lesson in Safety

A practical demonstration to teach school children how to board and leave street cars safely, was carried on by the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., under the direction of A. W. Koehler, safety engineer of the company, school teachers, street car conductors and motormen. A vestibuled-trailer and a rear-end pay-as-you-enter type of car were both sidetracked near the Shorewood graded schools which were used by all children from the first to the sixth grade to acquaint them in all phases of car safety under the eye of teachers and railway safety engineers. Following blackboard lessons in the classroom, the pupils visited the two sidetracked street cars. Then putting to use the lessons they learned, the youngsters one by one stepped out from the curb, looked each way for approaching automobiles and boarded the car.

Ten Cents Sought in Boise

The Boise Street Car Company, Boise, Idaho, has applied to the Public Utilities Commission for a 10-cent cash fare instead of the 7-cent fare now charged and a ticket rate of 7½ cents instead of one of 5 cents now in force. Increases are also proposed in the cost of tickets issued to school children from the present 2½-cent rate to 4 cents or 25 tickets for \$1. This action follows close upon the heels of the request of the Boise Valley Traction Company for increases on the South Boise and the Boise city belt lines. The increases are identical for both companies.

Two applications were recently presented to the City Council for franchises to operate buses in the city.

Appeal on One-Man Car Ruling in Dayton

Notice of an appeal to the United States Circuit Court of Appeals at Cincinnati was given on Jan. 2 from a decision handed down recently by Judge Smith Hickenlooper in federal district court holding invalid an ordinance adopted by the city of Dayton prohibiting the use of one-man cars. The appeal notice was given by Guy H. Wells, assistant city attorney of Dayton. The case is expected to be heard in March.

The appeal is based upon the claim by the city that the City Commission had a legal right to pass and enforce the ordinance and that the United States District Court had no jurisdiction in the matter. The ordinance barring the one-man car from the streets of Dayton was adopted some months ago following the receipt of petitions from Dayton residents. The City Railway took the matter into federal court and also obtained an injunction restraining enforcement of the ordinance until the courts had passed upon its validity. Reference was made to the recent court decree in the ELECTRIC RAILWAY JOURNAL, issue of Dec. 12, 1925, page 1047.

Frankford Line to Be Developed

Plans for the operation of the newly acquired Frankford, Tacony & Holmesburg Street Railway by the Philadelphia Rapid Transit Company, Philadelphia, Pa., were recently announced. The road, which was purchased for \$300,000, is now operating as Route 66. The 7½-cent city fare will be extended on Frankford Avenue by free transfer as far north as Blakiston Street, with a 7½-cent additional charge to the city line.

Users of the line will benefit by the reduced fare. Free transfers will be given between other routes. Tickets of the Frankford, Tacony & Holmesburg Street Railway will not be accepted as fare, but will be redeemed. A bus line has also been put in operation. The fare on the buses will be 10 cents with 3-cent exchange to and from all connecting P.R.T. surface and elevated lines. The old equipment has been superseded with P.R.T. cars and buses. The new project will be financed by the sale of the Philadelphia Rapid Transit Company 7 per cent preferred stock to riders in the Northeast section.

An effort was made on Dec. 29 to block the sale of the Frankford, Tacony & Holmesburg Street Railway to the P.R.T. interests by an application in the Common Pleas Court for the appointment of a receiver for the Northeastern Philadelphia Transit Company, which, at a public sale by receivers on June 19 last, acquired the franchises and property of the Frankford, Tacony & Holmesburg Street Railway for \$350,000. Arrangements were made, however, by agreement between the P.R.T. and the bondholders' protective committee of the Frankford, Tacony & Holmesburg Street Railway to postpone the date of settlement to fifteen days after the final termination of this litigation, but not later than June 30, 1926.

News Notes

Line Offered to Responsible Company.—Representatives of the Chautauqua Traction Company, who recently applied to the Public Service Commission for permission to discontinue service from Asheville to Mayville, N. Y., have offered to turn over all their facilities in that section to any responsible organization which will guarantee to maintain regular service. The proposition was submitted to representatives from the Jamestown Chamber of Commerce.

Will Meet to Discuss Traffic Problems.—A large public meeting for the consideration of traffic and parking problems of the city is the plan of a special committee appointed recently by the Salt Lake City Chamber of Commerce. This meeting will be held at the headquarters of the Chamber of Commerce in that city on Jan. 13. It will be attended by city officials, members of civic organizations, business men and others who are interested in alleviating traffic difficulties in Salt Lake City.

Wages Unchanged.—Carmen and other employees of the South New Orleans and the West New Orleans Light & Traction Company, Algiers, La., have signed an agreement covering wages and working conditions for the next two years, effective Jan. 1, 1926. The wages remain the same. The working conditions have been slightly changed, to the satisfaction of both the carmen and the street car officials.

Franchise Endangered.—The Western Ohio Railway, operating between a number of cities in Hancock, Allen, Mercer, Shelby and Miami counties in Ohio, with a large power plant in St. Mary's, Ohio, may lose its franchise privileges in St. Mary's under a city ordinance. The city administration charges that the company for years has violated stipulations of its franchise in that its tracks have not been kept in conformity to the street grades. Should the cars be barred from St. Mary's streets it would mean discontinuance of interurban service to New Bremen, Minster and Celina.

Fares Now Two Cents a Mile.—Permission was granted recently by the Public Service Commission to the Kaw Valley & Western Railway, an interurban operating between Kansas City and Lawrence, Kan., to make effective on Jan. 1 a schedule of passenger rates based on a charge of 2 cents a mile for one-way passage. The company also was authorized to base round-trip fares on a 3½-cent one-way mileage basis. The schedules will be filed later and formally approved. A short time ago the company received permission from the Public Service Commission to establish a maximum rate of 75 cents for the longest round trip on its line. Prior to that the rate between Lawrence and Kansas City had been 75 cents one way.

Second Edition of P. R. T. Guide.—A second printing of the P. R. T. route guide of trolley, subway-elevated and bus service in Philadelphia, Pa., has been found necessary. Copies are being placed on the cars for sale at 10 cents each. The proceeds from the sale are given to the Helping Hand Fund, used to relieve employees in temporary financial embarrassment.

Tariff of Poughkeepsie-Wappingers Falls Detailed.—The official tariff of changes in fares on the Poughkeepsie & Wappingers Falls Railway, Poughkeepsie, N. Y., referred to in the ELECTRIC RAILWAY JOURNAL, issue of Dec. 12, 1925, page 1049, provides with respect to the Poughkeepsie-Wappingers Falls monthly commutation ticket books as follows: Monthly commutation ticket books with coupons attached equivalent to 52 rides in and between the city of Poughkeepsie and the village of Wappingers Falls will be sold for \$7.80, subject to conditions of sale and use of monthly commutation ticket books. With respect to the Kingwood Park monthly commutation ticket books it provides as follows: Monthly commutation ticket books, with coupons attached, equivalent to 52 rides in and between the city of Poughkeepsie and Kingwood Park, or in and between the village of Wappingers Falls and Kingwood Park, will be sold for \$5.20, subject to conditions of sale and use of monthly ticket books.

Recent Bus Developments

Three Months Test at New Fare on Washington Buses

At a public hearing before the Public Utilities Commission of the District of Columbia on Dec. 30 talk of a merger of all street car and local bus lines was renewed and free universal transfers assumed the proportions of a probability in the near future. The Washington Rapid Transit Company, operating buses and now controlled by the North American Company, volunteered a temporary experimental reduction in fares and asked postponement of consideration of petitions for new bus lines in Sixteenth Street, Northwest.

William McK. Clayton, who had filed the petition for reduction of bus fares from 10 cents cash, five tokens for 45 cents, presented his argument in behalf of the Federation of Citizens' Associations. He said the company could well afford to reduce fares to six rides for 40 cents.

At the conclusion of his remarks the spokesman for the bus concern asked the commission to permit the company to reduce the fares for three months to 10 cents cash, six tokens for 50 cents, and defer further consideration until it was ascertained what income these rates would yield.

Mr. Clayton said he would not object to the sale of three tokens for 25 cents and free transfers at certain points to the lines of both the Washington Railway & Electric Company and the Capital Traction Company. The bus company refused to yield on these points and the commission ruled that its request be granted.

Following the hearing, Lieut.-Col. J. Franklin Bell, engineer commissioner, said:

It may be that the bus company can afford more of a cut in fares. If so, it will be demonstrated during the three months of testing the new rate. I am more interested in free universal transfers between all street car and bus lines. During the three months we will give consideration to that also. I would not be surprised if a definite merger plan were worked out in the meantime.

The commission entered an order effective on Jan. 1 for a period of 90

days authorizing the company to reduce rates to six tokens for 50 cents, the cash fare to remain unchanged. Transfer privileges continue as heretofore.

Method of Accounting for Bus Purchase Specified

In an order made recently authorizing the sale and transfer by Benno Baur of bus certificates and bus equipment on a line between Fort Wayne and Angola and another between Angola and Lake James to the Indiana Service Corporation, operating an interurban electric railway, the Indiana Public Service Commission places definite restrictions regarding the capital account. The order was written by Samuel R. Artman.

Mr. Baur's lines are known as the Northern Indiana Bus Company. The equipment consists of two twelve-passenger automobiles. Mr. Baur's sale price was \$5,000 for the two bus certificates and \$4,000 for the buses. The order said the vehicles are reasonably worth the sum stipulated and that the original cost was \$6,400. Mr. Baur already has set aside, under the commission's orders, \$170.66 in a depreciation fund and has paid out of that sum \$100 in depreciation expenses.

The order authorizing the sale provides specifically that as a part of the sale Mr. Baur shall transfer to the buying concern the balance in the depreciation fund and that the buying concern shall maintain and use it as the law provides in regard to depreciation.

Another provision of the order was that the \$5,000 of the purchase price, which represents the sale price of the certificates, is approved on the express condition that:

The Indiana Service Corporation shall not carry said sum of \$5,000 into its capital account so as directly or indirectly to constitute any part of the value upon which rates of service are to be charged, or so as to constitute any part of the value against which stocks, bonds, notes or other evidences of indebtedness may be issued by said purchaser and upon condition that the said sum shall not be directly or indirectly charged as an operating expense.

Electric railway companies long have become used to depreciation account and to selling bonds to cover the purchase of new equipment. Many of the independent bus operators, however, are expected to contest the decision, especially with regard to the depreciation fund. In case these companies lose in the contest, a revision of bus rates upward is certain to be the result, since it is generally conceded that operators cannot put aside this sum at present fares and continue to operate successfully.

Door-to-Door Service by Illinois Traction

The Illinois Traction System, Peoria, Ill., included in the Illinois Power & Light Corporation, believes that there is a field for freight and express traffic through the medium of motor trucks. The company has been exhibiting in the various cities through which it oper-

Local Licenses Needed in Massachusetts

THE full bench of the Supreme Court of Massachusetts, in three decisions handed down together, has decided it is illegal to transport passengers in buses between points within the Commonwealth of Massachusetts without securing the local license necessary under the statutes, even though the parties operating the buses incidentally do an interstate business. A fourth opinion was that under the criminal law an employee of a bus line may be prosecuted for operating a bus where the owner did not have the statutory licenses.

ates a fleet of 1-ton trucks, built especially for this service. Starting from Springfield on Dec. 26, the fleet made the circle of the various cities on the traction line. After the caravan has appeared in parade formation at all points, there will be a distribution to the various cities according to population and they will be placed in immediate service, picking up freight and express and delivering it to shippers and patrons of all kinds.

Competitive Indiana Bus Lines Seek Higher Fare

The application of the Indiana Red Ball Lines, Inc., for increased rates will be taken up by the Public Service Commission on Jan. 25. It is expected that Clyde H. Jones will preside. The Hoosier Stage Lines, Inc., operating bus lines that connect Indianapolis, Muncie and Marion, has also appealed to the commission for relief in this direction and a hearing will likely be set for some time in February. The company claims that its present rate of 2 cents a mile is inadequate to permit a profit. The company competes with the Union Traction Company. The Red Ball Lines simply asked the commission to authorize an increase which would meet the expenses of operation, taxes, and depreciation and to provide a fair return. The company succeeded the Hiner Red Ball Lines and operates twelve bus lines in Indiana. There has been a steady increase in the number of passengers handled, but an operating deficit will continue to exist, it is argued, until the rates are advanced. Fred I. Jones is receiver for the company. Unless relief is given, it is predicted that a number of the bus lines will be forced to suspend.

Bus Company in Beech Grove Loses Point

A controversy affecting the Beech Grove Traction Company, the citizens of Beech Grove, Ind., and the South Side Motor Coach Company, in which the citizens took sides with the traction company, has resulted in a decision which probably will set a precedent for city regulation of transportation systems. The town board instituted proceedings through a city ordinance to make the coach company keep off streets used by the traction company. The bus company filed proceedings in the Superior Court in Indianapolis to prevent the town board enforcing the ordinance, the constitutionality of which was questioned. The attorneys for the bus company argued that through the certificate granted by the Public Service Commission the company automatically received the right of the streets. Attorneys for the town board argued that the Public Service Commission's authority ended with the granting of the franchise.

The court ruled that the Public Service Commission had exhausted its authority when it granted a certificate to the bus company. The franchise, so the court held, was granted with the understanding that all authority vested in a municipality was not nullified. He said the town was within its right in designating streets for the bus company.

Crosstown Bus Service in Boston Well Patronized

The Boston Elevated Railway, Boston, Mass., has tried out a plan to operate buses between North Station and South Station in Boston on a reduced scale of fares, and has found it to be a paying service, which will be permanent. The single fare is 10 cents, but five tickets are sold for 30 cents.

Additions to rolling stock and further extension of bus routes that will serve downtown districts were outlined by Edward Dana, general manager of the Boston Elevated Railway, in a statement given out on Jan. 5. Double-deck buses are contemplated for the Boylston Street line, and in addition to this popular type of equipment 62 new steel cars will be added for street car lines.

Takes Over Three Lines in Indiana.

—The Indiana Service Corporation has been authorized by the Indiana Public Service Commission to take over the operation of three bus lines running out of Fort Wayne, Ind. The lines purchased are those operating between Fort Wayne and South Bend, between Fort Wayne and Marion and between Fort Wayne and Warsaw. The purchase price of two routes was \$10,500 and the other \$21,000.

Will Ship Freight by Truck.—The Worcester Consolidated Street Railway, Worcester, Mass., in addition to operating buses into Clinton will substitute a fleet of trucks for the freight cars in carrying express and freight parcels between Clinton and Worcester. The old plan was for the trolley freight to deliver and accept shipments at its freight terminal in Clinton. Under the new plan the trucks will call and deliver at the stores and mills. It is reported that the company is planning to purchase its own fleet of trucks for this service and also for similar service in other places, where the trucks will replace trolley freight cars.

Independent Company Favored.—Residents of East Wheeling and those riding buses from North End to East End, in Wheeling, W. Va., will secure a reduced bus fare following the recent action of the City Council in recommending to the State Road Commission the granting of a permit to the Bellaire-Neff Bus Company to operate after the first of the year. The bus subsidiary of the Wheeling Public Service Company, which has been operating for some time, has discontinued. The new company will charge a 5-cent cash fare, with a 4-cent rate by weekly tickets and a 3½-cent fare by monthly tickets. The attitude of the Wheeling Traction Company was that these rates are inadequate.

Buses Started in Place of Cars.—Bus service was substituted for street cars locally in Gulfport, Miss., and between Gulfport and Pass Christian on Jan. 1 by the Mississippi Power Company, which controls the Gulfport & Mississippi Coast Traction Company. The street cars still operate between Gulfport and Biloxi. Buses replace the cars with a fifteen-minute service on the Gulfport City line and 30-minute service on the lines to Long Beach and

Pass Christian. No change has been made in fares. The stop system is similar to that previously maintained by the railway. Railway employees were trained as bus drivers since the bus equipment arrived last fall.

In Command of Bus Operations.—Peter J. Calderone has transferred his ownership of eight bus lines operating between the Pawtucket Valley and Providence, R. I., to the United Electric Railways, and the latter company has now gained full control of motor operations in that section. Permission has been granted the company to combine the eight certificates into one. Mr. Calderone only recently purchased the eight bus lines from eight individual owners. The transfer of the bus properties to the railway was concluded on Dec. 28.

Opposes Motor Line.—Protests have been filed with the Ohio Public Utilities Commission by the Lake Shore Electric Railway, Cleveland, and the Northern Ohio Traction & Light Company, Akron, against the application of the Motor Freight, Inc., Detroit, for a certificate to operate motor trucks between Detroit and Akron, via Toledo and Cleveland. Both protests charge that the proposed motor line would be in direct competition with established electric lines.

Bus Fare Lowered.—The Washington Railway & Electric Company, Washington, D. C., has been authorized by the Public Utilities Commission to reduce the rate of fare on its Rhode Island Avenue bus line to six tokens for 50 cents, the cash fare to remain the same. The company is also ordered to give free transfers which will be good on any intersecting car or bus line of the Washington Railway & Electric Company or any intersecting car line of the Capital Traction Company, on payment of a 10-cent cash fare or payment of one ticket or token and 2 cents.

Bus Transactions to Be Concluded.—Arthur W. Brady, receiver of the Union Traction Company of Indiana, has been authorized by the Circuit Court at Anderson, Ind., to complete a recent transaction by which the company and the Indiana Service Company contracted to buy eight buses of the Interstate Safety Motor Coach Company, operating between Indianapolis and Peru and Fort Wayne. In the receiver's petition for authority, it was said that the Union Traction would pay \$54,395 for five of the buses and the Indiana Service Company would pay \$25,695 for three buses. The Union Traction will operate between Peru and Indianapolis and the other company between Peru and Fort Wayne.

So-Called Reading Case Continued.—After an all-day hearing on Jan. 6 before the Public Service Commission of Pennsylvania the so-called Reading case was continued for two weeks in order to permit the introduction of additional data. In this proceeding the electric railways are opposing the proposal of the Reading Railroad through its subsidiary, the Reading Transportation Company, to operate buses parallel to the existing electric railways and bus lines in Schuylkill County, Pennsylvania. This case was referred to in the JOURNAL for Dec. 19, page 1092.

Financial and Corporate

Kansas City Road Sold

Property Purchased by Attorney Representing Committee Acting for First Mortgage Holders

All the properties of the Kansas City Railways, Kansas City, Mo., were bid in at the foreclosure sale of the company's assets on Jan. 4 by P. C. Groner, Chicago attorney, acting in behalf of the reorganization committee. The Missouri and the Kansas properties of the company were first offered for sale separately by John T. Harding, special master commissioner, but Mr. Groner, the only bidder, was silent until the properties were offered as a whole, when he entered a bid of \$8,000,000 for the property in its entirety.

Mr. Harding expressed the intention of reporting the sale promptly to Judge Kimbrough Stone, referee, before whom it must come for confirmation in the federal court. Upon its confirmation, the sale will eliminate all interest in the Kansas City Railways of J. Ogden Armour, for many years a dominant figure in the railway, as well as the other remaining stockholders of the old organization.

Approximately \$47,000,000 in liens against the property are said to have interposed between Mr. Armour's stock and his possession of the property. In claims presented in behalf of Mr. Armour no mention had been made of the stock held by him in the old organization, but he made several attempts to collect approximately \$2,000,000 for funds which he is said to have personally advanced the company shortly before the receivership.

Blatchford Downing, attorney for the second mortgage bond holders, was an observer of the foreclosure sale. The second mortgage bond holders have so far been left entirely out of the reorganization plan, having first refused an offer of five shares of stock for each \$1,000 in second mortgage bonds held in the old company and, later, refused an offer of 20 cents on the dollar as a cash compromise. Mr. Downing did not contest the court's final order of foreclosure, but he indicated last May that he would press the contentions of his clients when the sale comes before Judge Kimbrough Stone for the necessary confirmation. In the meantime Francis M. Wilson and Fred W. Fleming, the receivers, will remain in charge of the property.

In qualifying himself as a bidder Mr. Groner presented Mr. Harding, special master, with certificates conveying a total of \$854,000 in first mortgage liens on the railway property as a bond binding the sale.

In his preliminary explanation of the bid Mr. Groner said a nominal bid of \$8,000,000 was made as representing the approximate present market price of the first lien securities. He said the postponement of the sale at his request from Dec. 15 had resulted in deposits by the first mortgage bond and note

holders of an additional \$150,000 in bonds.

In presenting the bid Mr. Groner said he represented more than 7,000 holders of first mortgage notes and bonds, owning more than 96 per cent of all the first liens against the property. He also announced that other holders of

first liens could deposit their securities at any time up to the day of the court's confirmation of the sale.

The receivers are said to have more than \$4,500,000 in their treasury, invested in government bonds. It is said that Mr. Harding will report the presence of these funds to Judge Stone at the time he reports the bid of \$8,000,000 for the court's confirmation.

Mr. Groner is attorney for the New-man-Woolfolk interests. He is quoted as saying that the cash left in the company's treasury will be utilized for improvements.

Significant Tax Suit

Discrimination Charged by Akron Company—Uniformity Sought in Method of Assessment—Temporary Injunction Served

COUNTY treasurers of Summit, Stark, Portage, Medina, Tuscarawas, Cuyahoga, Wayne and Noble Counties—all the counties through which the Northern Ohio Traction & Light Company operates—have been served with a temporary order from the federal court of the northern district of Ohio restraining them from collecting taxes assessed against the company for 1925. The company's taxes are fixed by the state commission. The temporary order follows the filing of a suit by the company against the counties named to secure a reduction in taxes. The contention is that the property of the company is not assessed upon the same basis as other property in Ohio. The suit is the first of its kind brought by a public utility in Ohio and probably the United States.

The company declares that, because real estate valuations in general are too low, it is forced to pay taxes proportionately too high. Prior to March 1, 1925, the company filed with the Tax Commission its verified annual report as prescribed by the commission and that the commission placed a tentative value of \$27,061,180 upon the property. The company applied for a hearing before the commission, but could get no reduction. The apportionment was made and taxes aggregating \$750,000 were assessed.

The company says:

For many years there has been in the respective counties a systematic general undervaluation of real estate for the purpose of taxation; that in the years 1924 and 1925 the average tax valuation of real estate in said counties would not exceed 45 per cent of the true valuation of said real estate; that there has been no reappraisal of real estates in many of said counties for many years, during which time the aggregate value of real estate in said counties has enormously increased; that the Board of Commissioners of said respective counties and the State Tax Commission have refused and neglected to increase and re-adjust the assessments of said property on the tax duplicates of said counties or to cause a proper reappraisal to be made thereof, although being fully advised of the undervaluation and inequalities as aforesaid, but have knowingly and systematically permitted said condition to continue and grow worse from year to year; that as a result of the failure of said taxing boards to adopt and follow a uniform rule in assessing the property of the plaintiff and other property in said state and said counties, and the systematic and general undervaluation of other property in said counties, the tax rate in said respective counties for the year 1925 is much higher than would have been required to produce the same revenue if the real estate therein had been assessed at its true valuation in money as required by law, and this plaintiff has been discriminated against, is denied the equal

protection of the laws and is about to be deprived of its property without due process of law, in violation of the Fourteenth Amendment to the Constitution of the United States and in violation of the Constitution and laws of the State of Ohio, providing that property should be taxed at its true value in money by a uniform rule.

The company says further:

The said several defendants, as county treasurers, are each severally demanding the payment of the whole tax shown by each county tax duplicate, the first half of which was due Dec. 20, 1925, and are intending and threatening to enforce and will enforce the collection of the whole amount of tax shown by said tax duplicates respectively, including the amount unlawfully assessed as well as the amount lawfully due, and to impose penalties upon the plaintiff upon the amount of tax assessed, and to sell plaintiff's property at tax sale, or else to distraint plaintiff's property therefor, to the great and irreparable injury of the plaintiff, and the plaintiff will be subjected to a multiplicity of vexatious suits and prosecutions, and also subjected to an illegal lien and a cloud upon the title to its property within the state.

The company says that it is ready and willing to pay the tax levied against it in the amount which would have been assessed against it if its property had been assessed by a uniform rule along with other taxable property, and that, on ascertainment by the court of the true amounts of tax lawfully due from it in each county, it offers to pay any such lawful tax as a condition of its relief in the premises.

A. C. Blinn, vice-president and general manager of the company, says that the company has no desire or inclination to evade its just share of the tax burden. The law of Ohio provides that all property shall be taxed by a uniform rule, and it is the contention of the company, Mr. Blinn says, that the Tax Commission of Ohio does not tax its property by the same method and on the same basis as other property is taxed.

\$304,704 Refunded by Pittsburgh Receivers

The final report of C. A. Fagan, S. L. Tone and W. G. George, former receivers for the Pittsburgh Railways, Pittsburgh, Pa., subsidiary of the Philadelphia Company, has been filed in the federal court, showing a balance of \$304,704 to be refunded to the company. The receivership was lifted on Jan. 30, 1924. The court at that time ordered that \$500,000 be left in the control of the receivers to satisfy outstanding claims.

Merger in Williamsport

Four traction companies operating over the streets in Williamsport, Pa., and vicinity will be merged to form the Williamsport Railways following the passing of an ordinance by the City Council providing for such amalgamation. Traction company problems have been before the City Council for the past six months and the Mayor some time ago named a committee of citizens to make a report. This amalgamation follows the report. The companies merged are the Vallamont Traction Company, East End Passenger Railway, South Side Passenger Railway and the Williamsport Passenger Railway.

The final details of the merger will not be consummated for at least two months due to legal acts necessary. A straight 10-cent fare will be asked effective within 30 days. The new company plans to modernize the system.

Mount Manitou Road Not Sold.—The Mount Manitou Park & Incline Railway, Colorado Springs, Col., has not been sold at sheriff's sale, as reported in the *ELECTRIC RAILWAY JOURNAL*, issue of Aug. 8, page 233, nor should it have been included in the receivership table in the issue of Jan. 2, 1926, page 43. The road is a success financially.

Car Trusts of Gary Railways Offered.—An issue of \$350,000 of 5½ per cent equipment trust certificates of the Gary Railways, Gary, Ind., is being offered by Halsey, Stuart & Company, New York. The notes, which are issued under the Philadelphia plan, are priced to yield from 5.50 per cent to 6 per cent, according to maturities.

Worcester Board Increased.—W. E. McGregor of Harris, Forbes & Company, New York, bankers, has been elected a director of the Worcester Consolidated Street Railway, Worcester, Mass. His election increased the board to nine members.

Seeks Abandonment Permission.—The Depew & Lancaster Railway Corporation, connecting Cheektowaga, Depew and Lancaster, applied on Dec. 28 to the Public Service Commission for approval of a declaration of abandonment. The company alleges that the road has operated at a loss ever since it was placed in operation in 1921 and that the deficit incurred in such operation now amounts to approximately \$60,000; that up to Sept. 30, 1925, unpaid interest accrued on a first mortgage bond issue of \$110,000, amounting to \$27,625. The stockholders and directors of the company on Dec. 28 voted to take the necessary steps to abandon the 12-mile road.

\$6,000,000 Illinois Power Issue Offered.—The Illinois Power & Light Corporation, Chicago, Ill., on Dec. 29 placed with the investing public an issue of \$6,000,000 of first and refunding mortgage 5½ per cent gold bonds, series B, due in 1954. The bonds were offered by E. H. Rollins & Sons, Harris, Forbes & Company, Halsey, Stuart & Company, Inc., Spencer Trask & Company, Marshall Field, Glore, Ward & Company, and Blyth, Witter & Company, at a price of 99 and interest, to yield over 5.50 per cent. Proceeds

of the bond issue are to be used to reimburse the company for extensions and betterments and to retire \$2,596,800 of the underlying bonds.

Interstate to Issue Securities.—Following a conference of members of the Indiana Public Service Commission and officers of the Interstate Public Service Company, Indianapolis, Ind., it was learned the company soon will ask the commission for authority to sell securities of approximately \$1,000,000 to \$1,500,000 to provide the company with more working capital.

Wisconsin Bonds Offered.—Hill, Joiner & Company, Halsey, Stuart & Company, Inc., and Paine, Webber & Company are offering at 98½ and interest to yield about 5.60 per cent \$1,200,000 first lien and refunding mortgage 5½ per cent gold bonds of the Wisconsin Power & Light Company, Oshkosh, Wis., known as Series D. The bonds are dated Dec. 1, 1925, and are due Dec. 1, 1955. The proceeds will be used for additional property required, for expenditures made and to be made for additions and for other corporate purposes.

Legal Notes

CALIFORNIA—Use of Highways by Private Carriers under Jurisdiction of Legislature.

A truck company had entered into a purported lease with an orange growers' association to supply certain trucks to be used in the transportation of fruit, but the trucks were to be operated by the truck company. This was held to bring the trucks so operated under the Auto Stage and Transportation Act which covered the use of buses, auto trucks, etc., "in the business of transportation of persons or property for compensation," as well as common carriers. The act mentioned forbids the use of public highways to any such carrier, except under certain conditions, one of which is that it must obtain from the Railroad Commission a certificate of convenience and necessity. Another clause empowers the commission to fix rates for such service. It was held that the Legislature could not transform the private carrier to a common carrier, but that the act did not do this. The privilege of using the public highways as a place for the transaction of business is not a vested right, but a privilege which the state may grant or withhold at its pleasure, and if it grants this permission, it may do so upon such terms and conditions as it may see fit to impose. A distinction was drawn between the case at court and that of Michigan Public Utilities Commission v. Duke, in that in the latter case, Duke was operating under contract existing before and at the time of the enactment of the Michigan statute, whereas in the case at court, the contract was not made until after the passage of the California statute. The truck company was not obliged to submit to the conditions imposed by it, but if it used the public highways, it should be deemed to have thereby consented to the conditions prescribed by the Legislature. [Frost et al. vs. Railroad Commission of California et al., 240 Pacific Rep., 26.]

KENTUCKY—Degree of Ability to Stop Car defined.

Expert evidence as to the distance within which an electric car could have been stopped is insufficient to contradict the established physical fact that the car did not stop within such distance, in view of the evidence as to

what was done to stop it. The company is not necessarily liable for damages if the motorman failed in some degree to exercise the utmost care possible by immediately comprehending the whole situation when a person is in peril and loses not a second in the performance of every duty imposed upon him by the sudden emergency. Such presence of mind and efficiency are not possessed by ordinary men, nor available to the defendant; hence, the plaintiff is not entitled to protection in that extreme degree. [Kentucky Traction & Terminal Co. vs. Brackett, 276 Southwest. Rep., 828.]

MISSOURI—Neglect in Allowing a Ground to Remain on a Transmission Pole Makes Company Liable for Injury to Lineman.

Attached to a pole carrying high-voltage wires was a guy wire used to maintain in position the smokestack of a neighboring building. The guy wire was attached to the pole with the consent of the railway company. A lineman, not knowing this guy wire was grounded, stood on it while altering the transmission wires and received a fatal shock. The railway company, the owners of the stack, and the contractor for its erection were held jointly responsible. [Smith vs. St. Joseph R. L. H. & P. Co., 276 Southwest. Rep., 607.]

TEXAS—Carrier Owes Duty to Passenger to See that Aisle Is Not Obstructed When Passenger Is Alighting from Car.

A woman passenger on a crowded one-man car was injured while going to the front of a car to alight by stumbling over a suitcase left in the aisle by another passenger. The court held that the high degree of care which a carrier owes to its passengers may in law include the duty to see that the aisle of its car is not obstructed by a large suitcase over which a passenger is likely to stumble and fall, especially at the time when the car is stopped for this passenger to alight. In consequence, the issue of negligence in this case should have been submitted to the jury. The court said that the negligence alleged does not depend on knowledge of the presence of the obstruction, but on failure to use care to prevent the obstruction being placed in the aisle. [Houston Electric Co. vs. Bagg, 276 Southwest. Rep., 641.]

Personal Items

Messrs. Sawyer and Eales Go Abroad

First Vice-President of American Electric Railway Association Chosen to Report to Australian Government

Two American engineers, W. H. Sawyer, East St. Louis, and H. W. Eales, St. Louis, both of whom occupy prominent places in the electrical industry of the United States, will sail for Australia on Feb. 2 to make a survey of electric power resources in the Antipodes. Announcement to this effect



W. H. Sawyer

was made on Jan. 6 by Sir James Elder, Commissioner for Australia in the United States of America.

Officially Messrs. Sawyer and Eales have been appointed by the government of the State of Victoria, through the Prime Minister's Department of the Commonwealth of Australia, to "investigate and report on the Yallourn brown coal electricity generation scheme and connected power undertakings of the government electricity commission." Actually, however, these men have been summoned to Australia to place the benefit of America's electrical experience at the disposal of a country which aspires to change from a mere producer of raw materials to a completely self-contained nation, a nation quite capable of supporting itself.

Mr. Sawyer, an executive engineer, is president of the East St. Louis & Suburban Railway Company, East St. Louis, Ill., and an officer of other properties controlled by the North American Company and is first vice-president of the American Electric Railway Association. Mr. Eales, who goes to Australia as his assistant, is a regional vice-president in the American Institute of Electrical Engineers and is active in National Electric Light Association work. Both Mr. Sawyer and Mr. Eales are undertaking the mission to Australia on extended leaves of absence from their duties in the North American system.

With an area almost as large as the

United States, with a population of nearly 6,000,000, and with natural resources so abundant and so varied that it produces all essentials of an economic independence, Australia finds itself chiefly engaged in producing raw materials for other countries to manufacture into finished products. What Australia needs is development of its electric power resources so that it can manufacture the materials which it produces. Because the government there believes that the United States is far ahead of other nations in backing up its man-power with motive power, it came to America for the men best qualified to tell it how to develop electric plants and how to use them.

The chief problem faced by Australia and by the two American electrical experts is how to make efficient use for electric generation of enormous quantities of "brown coal," a low-grade fuel of somewhat lesser quality than the American lignite. This coal contains from 60 to 65 per cent moisture, and if means are found whereby it can be dried out for use in steam-electric generation a great stride will be accomplished toward providing Australia with an abundance of cheap electricity.

The Victorian Electricity Commission has already spent more than \$30,000,000 in generating plants and distribution system, and before embarking upon a wider field to stimulate the use of electricity it desired the best information obtainable, with recommendations for future development. It is generally understood that in selecting American engineers for this work the government not only appreciated the advances made by the American electrical industry but desired the appointments to be regarded as an international compliment to the United States.

W. A. Seten Commercial Manager at Wheeling

W. A. Seten, Pittsburgh, has been appointed commercial manager of the Wheeling Traction Company, Wheeling, W. Va. He will succeed J. E. Alberts, former assistant general manager, who recently resigned to accept an offer from the Public Service Railway, Newark, N. J. This announcement was made by A. C. Spurr, general manager of the local company. Mr. Seten began his duties on Jan. 4. For the last few years he has been connected with the J. G. White Corporation, New York City. He has also been connected with the Manila Electric Company in the Philippine Islands in charge of the transportation department.

The commercial department, of which Mr. Seten will be manager, has been created by the Wheeling Traction Company in place of the assistant general managership. The duties of the office require that the head of the department concern himself with the quantity and the quality of the service, complaints from the general public and

the advertising end of the railway business. He will also assist the general manager.

G. B. Powell Superintendent at Louisville—Other Changes

Changes in the personnel of its transportation department have been announced by the Louisville Railway, Louisville, Ky., incidental to the reorganization of the department following the death of Anthony F. Connelly after 50 years of service.

G. B. Powell has been appointed superintendent of transportation of the company. Mr. Powell was employed by the company from August, 1904, to September, 1906, as trainman; from September, 1906, to March, 1910, as carhouse foreman; from March, 1910, to February, 1920, as superintendent of



G. B. Powell

employment and schedules; from February, 1920, to December, 1925, as assistant general superintendent, and on Dec. 15, 1925, he was appointed to his present position of superintendent of transportation.

Albert E. Nelson has been appointed assistant superintendent of transportation. He was employed from October, 1910, to February, 1912, as trainman; from February, 1912, to January, 1920, as carhouse foreman; from January, 1920, to December, 1925, as transportation clerk, and on Dec. 15, 1925, he was appointed to his present position as assistant superintendent of transportation.

Ernest B. Ellingsworth has been appointed assistant superintendent of transportation. He was employed from August, 1898, to February, 1905, as trainman; from February, 1905, to December, 1925, as carhouse foreman, and on Dec. 15, 1925, he was appointed to his present position as assistant superintendent.

B. H. Williams has been appointed chief inspector. He was employed from August, 1887, to January, 1890, as trainman; from January, 1890, to June, 1907, as carhouse foreman; from June, 1907, to December, 1925, as inspector, and on Dec. 15, 1925, he was appointed to his present position as chief inspector.

Frank Raschig, who has been executive secretary and principal assistant engineer of the Cincinnati Rapid

Transit Commission, Cincinnati, Ohio, has been appointed chief engineer of the commission to succeed Frank S. Krug, who resigned to practice for himself in the field of engineering.

Changes on B.-M. T.—

James Addison Comptroller

James Addison was elected comptroller of the Brooklyn-Manhattan Transit System, Brooklyn, N. Y., to succeed the late Howard Abel at the meeting of the board of directors on Dec. 21, 1925.

A. P. Clausonthue will continue as assistant comptroller.

De Forest P. Rudd, who has been with the system for some years, was made an additional assistant comptroller.

Mr. Addison came to the United



James Addison

States from England in 1902 and for two years was associated with the accounting firm of Patterson, Teele & Dennis, New York. He then became auditor of the Eaton, Crane & Pike Company, Pittsfield, Mass., where he remained eight years. Mr. Addison next was appointed auditor of the Franklin Railway Supply Company and its affiliated organizations. This position he occupied until January, 1918, when he was elected comptroller of the National City Bank, New York. Mr. Addison remained with the National City Bank for five years. During the past few years he has been practicing public accounting and recently he had been engaged on special work for Patterson, Teele & Dennis, the firm with which he was first associated after coming to the United States.

The new comptroller was born in Leith, Scotland. He was educated at Edinburgh, attending Heriot Watt College and taking special courses at Edinburgh University to prepare himself for a business career. His training as an accountant was obtained in Edinburgh and also at New Castle-on-Tyne and Huddersfield, England. He is a vice-president of the Garden City Bank and a member of the American Institute of Accountants, the Garden City Country Club and Crescent Lodge, F. and A. M.

Frank S. Krug has resigned as chief engineer of the Cincinnati Rapid Transit Commission, Cincinnati, Ohio.

Mr. Krug said that since only a few months more work was needed to place the line in operation he felt that his services were no longer needed. Mr. Krug also tendered his resignation as city engineer. Before being appointed city engineer he was secretary of the Frank H. Kirchner Construction Company. Prior to that he had been county engineer for a number of years. Mr. Krug plans to go into the private practice of engineering.

C. O. W. Weidman at Altoona— Other Changes

Claude O. Weidman, Newark, N. J., formerly superintendent of the Morris County Traction Company, Morristown, N. J., has assumed the duties as superintendent of transportation for the Altoona & Logan Valley Electric Railway, Altoona. He succeeds John R. Condo, resigned.

Mr. Weidman has served electric railways for more than twenty years. He began his work with the Southern New York Railway & Power Company and then went to Morristown, N. J., where he remained for eleven years.

G. S. W. Brubaker has taken the position as engineer of maintenance and construction at Altoona, succeeding Frank D. Hain, resigned.

Mr. Brubaker has been engaged in rebuilding work for many years with the American railways. He rebuilt the lines at Chester, Wilmington, Darby and other Eastern points.

John R. Condo, superintendent, who resigned, served the Logan Valley since 1917, succeeding Lee T. Shannon, now general manager of the Johnstown Traction Company.

Frank D. Hain, engineer, who resigned, served the company for twelve years, having a leave of absence for two years to serve as engineer for the city of Altoona.

H. D. Bercaw Akron Property's Southern Division Manager

Henry D. Bercaw, who has been claim agent of the Northern Ohio Traction & Light Company at Canton, Ohio, for the last five years, has been appointed manager of the Canton and Massillon systems of the company as well as the company's interurban lines south of Akron. He is given full authority to handle all company matters, both city and interurban, pertaining to the Southern Division. Mr. Bercaw assumed his new duties Jan. 1. He has been with the company seven years.

In announcing the appointment, A. C. Blinn, vice-president and general manager of the entire property, said that the company had felt for some time that the industrial and commercial development of Canton demanded a local resident manager. "Canton has witnessed a splendid and remarkable growth during the last few years," he said, "while many other cities were marking time. It is partly in recognition of this, and partly because the city's transportation needs development, that the company has selected Mr. Bercaw as manager."

Mr. Bercaw has a large following among those interested in civic affairs.

H. L. Andrews Advanced by General Electric

H. L. Andrews has recently been appointed assistant engineer of the railway engineering department of the General Electric Company, in administrative charge of the department. For some time he has been in charge of car equipment work in that department. In this capacity he has been identified with all the large railway equipment propositions that have come up in the last few years and in that way has built up a wide acquaintance in the electric railway operating field, to the members of which his advancement will be pleasing. This position will enable Mr. Andrews to use to better advantage his boundless energies and executive ability under W. B. Potter, who for many years has



H. L. Andrews

been chief engineer of the railway department.

Mr. Andrews was born in Boonville, Mo., in 1889. He was graduated from the University of Missouri in 1910 with the degree of B.S. in E.E. He entered the testing department of the General Electric Company, Schenectady Works, in August, 1910. In May, 1912, he was transferred to the railway motor department and four years later, 1916, to the railway engineering department, one year later being placed in charge of car equipment work.

Obituary

Dr. Karl Goldschmidt

Dr. Karl Goldschmidt, head of Th. Goldschmidt A. G. of Essen, Germany, died on Jan. 4. Dr. Goldschmidt was approaching his 70th year. He had long been prominent in the business and scientific world, both here and abroad, not only as the active head of Th. Goldschmidt A. G., but also on account of extensive chemical research and development work, particularly in connection with processes for the detinning of scrap tin plate, upon which subject he was regarded as a recognized authority.

In partnership with his younger brother, the late Prof. Hans Goldschmidt, inventor of the well-known thermit process, who died in the early

part of 1923. Dr. Karl Goldschmidt carried on the enterprise founded by his father and brought it to its present dominant position among German industries. He was also one of the founders and original directors of the Goldschmidt Detinning Company, now the Metal & Thermit Corporation, New York City.

Endowed with rare vision and energy, Dr. Goldschmidt took an active interest in the welfare of his employees, being instrumental in the establishment of old age and invalid pensions from which workmen with more than ten years of service were entitled to relief. From his own means he also set aside a large sum for the establishment of a suitable home for those of his employees who after illness might need a quiet place at which to rest and recuperate. Dr. Goldschmidt's eldest son, Dr. Theodore Goldschmidt, succeeds his father as active head of the German firm.

John A. Rigg

John A. Rigg, president of the Interstate Railways, Camden, N. J., died on Jan. 2 at his apartment in the Longacre Hotel, Philadelphia. He was in his seventy-first year. Death was said to be due to apoplexy.

Mr. Rigg was born at Gibraltar, Berks County, Pa., on Feb. 14, 1854. At the age of fifteen he quit the farm and went to Reading, where he began his career as an iron puddler. Three years later he took a position with the local railway as a conductor. In 1874 he was promoted to superintendent, and continued in the service of the Reading City Passenger Railway until 1892, when he became the general manager of the People's Passenger Railway, Philadelphia.

In this latter connection Mr. Rigg gathered about him able business associates and organized the Reading Traction Company, which leased and consolidated the street railways of Reading, also the Metropolitan Electric Company, which manages the Reading Electric Light, Heat & Power Company, and the Neversink Electric Light, Heat & Power Company, controlling the electric lighting business of Reading.

Mr. Rigg was also instrumental in forming the United Power & Transportation Company, most of the stock of which is controlled by the Interstate Railways. He was an officer and director of subsidiaries of both of these companies, among them the Trenton Street Railway, operated under lease by the Trenton & Mercer County Traction Corporation; the Delaware County & Philadelphia Electric Railway, the Media, Glen Riddle & Richdale Electric Railway, the Wilkesbarre & Wyoming Valley Traction Company, which is leased to the Wilkesbarre Railway, and the Wilmington & Chester Traction.

B. H. Ryder of the American Steel & Wire Company died on Dec. 26. He went with the American Steel & Wire Company more than twenty years ago, entering the electric wire and cable department. With the exception of a short connection with the Pittsburgh office of the company about seven years ago, his activities were carried on almost entirely in the West, with Chicago as his headquarters.

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

Striking Comment by Victor Angerer

Prominent Manufacturer Sounds Key-note in Question of Parts Manufacture by Railways

Out of the turmoil of discussion which centers about the question of parts manufacture by operating companies may come a definite understanding as to the presence or absence of economies involved in this practice. For the time, however, opinion continues divided, although the weight of numbers seems to be considerably against the practice. Established manufacturers of electric railway equipment might naturally be expected to view the matter from the point of its possible effect upon them, nevertheless some very illuminating comments frequently are obtained from this quarter.

An example of this appears in a recent communication received from Victor Angerer, vice-president William Wharton, Jr. & Company, Inc., Easton, Pa. Mr. Angerer feels very keenly on the subject and has given considerable thought to the various aspects of the problem. While the William Wharton Company, because of the highly specialized nature of its product, is probably less affected than other manufacturers by this recently evidenced tendency on the part of some operating companies, nevertheless Mr. Angerer is much interested in the principle involved.

He mentioned the present discussion concerning the growth of this practice among steam railroads, particularly a number of addresses given at the recent annual meeting of the Railway Business Association on the subject. He then asked if the criticism advanced concerning the mutual relations co-operation between manufacturers and railroads in this field were not also applicable to the electric railway field. He went on to say:

Hasn't the period of retrenchment and repairs, instead of renewal of equipment, etc., led a number of operating companies to extend the work of their auxiliary shops

into what can be done better and more economically by and purchased from the specially equipped manufacturer? From what we know, this practice or tendency of the railroad and the railway doing some manufacturing of their own material requirements has affected nearly all lines of supplies to the railroads and the railway lines. Is there any true economy in this to the operating companies?

It is of course well known that the larger manufacturers annually expend much money in research and in developing new materials for railway use. Naturally this policy is not followed purely from a spirit of philanthropy. The manufacturers expect a fair return on this investment from sales of materials thus developed. Operating companies quite obviously cannot afford to expend a great deal of capital in this direction, and if the manufacturer is discouraged from continuing his research program because of what he considers unwarranted competition on the part of his erstwhile customers the industry as a whole is bound to suffer.

MATTER SHOULD BE THRESHED OUT

Mr. Angerer states his hope that the whole subject will be carefully studied and threshed out between the managers of the operating companies and the manufacturers of the various lines of supplies and equipment. He looks for a greater degree of co-operation between the parties involved.

As for the outlook for special trackwork in the future, Mr. Angerer says:

We manufacturers appreciate the conditions which compelled the electric railways to disregard ultimate economy and follow a policy of restricting the immediate outlay of money by making all possible temporary repairs instead of the purchasing of new materials. The improved condition of the electric railways, however, gives us hope for the future—we might say the immediate future. It is, of course, only natural that expenditures for improvements are directed first to the cars and other equipment and that track comes last. While, therefore, manufacturers of such other equipment have already felt the greater activities, special trackwork manufacturers still are looking to the future.

In speaking of competition between traction companies and independent bus lines, he says:

The bus does not scare us. Maybe it will help by hastening the necessary improvements in the condition of the track of the railway lines and the betterment of the high-class cars and to satisfy the public, who believe that they see some advantages in the comfortable seats and rubber-tired wheels of the bus, but who, we are assured, would not want to be without the railway lines and could not be without them.

Mr. Angerer realizes that the railway manager must heed the demand for his customers, the public, for better cars, more cars, smoother riding and less noise in operation. To satisfy these demands and at the same time preserve the new rolling stock, higher degree of maintenance of the track must necessarily follow. Ultimate economy in the maintenance should also call for renewals of the worn special trackwork in preference to frequent temporary repairs. All these factors together make the manufacturers opti-

Metal, Coal and Material Prices

Metals—New York		Jan. 5, 1926
Copper, electrolytic, cents per lb.	14.125	
Copper wire base, cents per lb.	16.00	
Lead, cents per lb.	9.25	
Zinc, cents per lb.	8.90	
Tin, Straits, cents per lb.	63.25	
Bituminous Coal f.o.b. Mines		
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	\$4.625	
Somerset mine run, Boston, net tons	2.10	
Pittsburgh mine run, Pittsburgh, net tons	2.05	
Frauklin, Ill., screenings, Chicago, net tons	1.875	
Central, Ill., screenings, Chicago, net tons	1.425	
Kansas screenings, Kansas City, net tons	2.30	
Materials		
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	\$7.00	
Weatherproof wire base, N. Y., cents per lb.	18.25	
Cement, Chicago net prices, without bags	2.10	
Linseed oil (5-bbl. lots), N. Y., per gal.	0.225	
White lead in oil (100-lb. keg), N. Y., cents per lb.	0.1550	
Turpentina (bbl. lots), N. Y., per gal.	\$1.125	

mistic regarding the coming business in the line of special trackwork, he added.

Officers for American Car & Foundry Motors Announced

The American Car & Foundry Motors Company, which was recently organized to take over control of the Hall-Scott Motor Car Company, Berkeley, Cal., and Fageol Motors Company, Kent, Ohio, on Jan. 6 announced that W. H. Woodin had been named chairman of the board of directors and C. S. Sale president.

Col. E. J. Hall, one of the co-designers of the Liberty airplane engine, was made a vice-president, together with Horace Hager, L. Stancliffe, G. R. Scanlan and F. R. Fageol. H. C. Wick is secretary and S. A. Mallette treasurer.

The J. G. Brill Company, Philadelphia, builder of electric railway cars, through its interest in the Hall-Scott and Fageol companies, is represented on the board of directors by S. M. Curwen, its president.

Successor to Kelly-Springfield to Build Buses

Sale of the plant, equipment and material on hand of the Kelly-Springfield Truck Company to the American Bus & Truck Company, a Delaware corporation, has been confirmed by Judge Frank M. Krapp of Common Pleas Court, by whose orders the receiver of the Kelly company, Pearl A. Lewis, offered the property for sale. The new owners plan to expand the activities of the corporation. Edward L. White, New York, representing the American company, will remain in Springfield to assume charge of the plant. He said the company will add a line of buses to be manufactured under foreign patents and that these will all be produced at the Springfield plant. The Kelly-Springfield company did not manufacture buses, but it frequently provided chassis on special bus orders.

W. J. Overman With Fageol—D. P. Knight Succeeds Him

W. J. Overman has resigned as engineer of the railway, department of the Boston office General Electric Company to accept a position with the Fageol Company, 120 Broadway, New York, builder of buses. Mr. Overman will specialize in the application of the electric drive in his new work. He was graduated from the Virginia Polytechnic Institute and has been with the General Electric Company for fifteen years, including service on the test and at the Schenectady works for eight years.

Donald P. Knight has become associated with the Boston office of the General Electric Company as engineer for the railway department. He was graduated from the Massachusetts Institute of Technology three years ago and has since been engaged on the Schenectady test and in railway motor work.

More Gas-Electric Cars

New Haven Railroad Orders Five of Type Demonstrated Recently by Brill and Westinghouse

An interesting demonstration of the recently developed Brill-Westinghouse gasoline-electric rail car was made on Jan. 5 over some of the lines of the Pennsylvania Railroad near Philadelphia. The particular car used was of 250 hp., and was one of the three units of this type delivered to the Pennsylvania Railroad this week for use in Indiana.

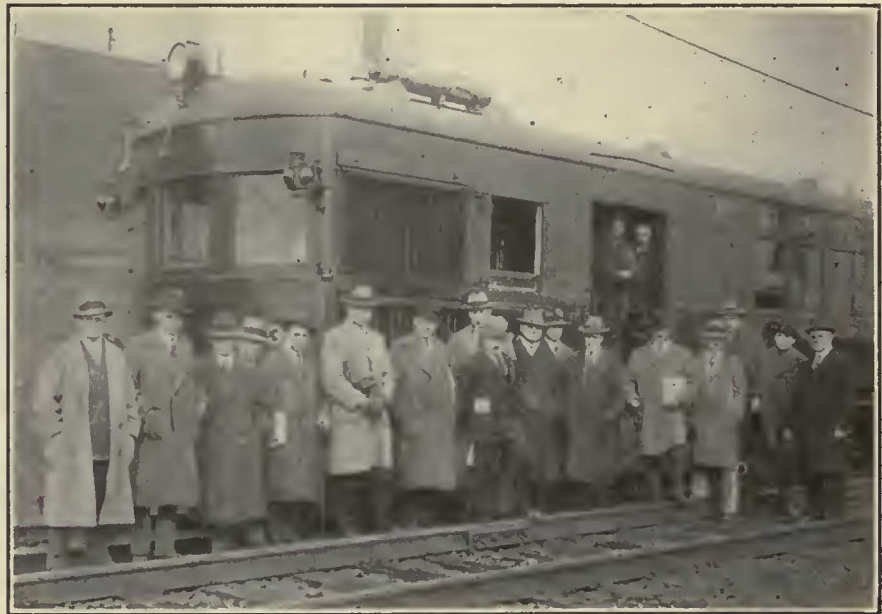
It is worthy of note that an order for five of these cars has just been placed with the J. G. Brill Company, Philadelphia, and the Westinghouse Electric & Manufacturing Company, by the New York, New Haven & Hartford Railroad. This brings the total number of units sold or contracted for to twenty. During the demonstration run a distance of approximately 60 miles was covered by the car, with its load of railroad and manufacturing officials, newspaper men and representatives of trade journals. Particularly noticeable as operating characteristics of this new equipment were the smoothness of operation and acceleration and the facility with which the car could be handled. Noticeable, too, was the attention which had been

Three cars each have been ordered by the Erie Railroad, the Boston & Maine, the New York, Ontario & Western Railway, and the Pennsylvania Railroad. The Reading Company, the American Car Company, and the Great Northern Railway each have single cars which are being used for trial and demonstration purposes.

Seats for 61 passengers and 90 sq. ft. of baggage space are provided with a standard arrangement. The car is 60 ft. in length, and weighs complete with M. C. B. standard trucks and equipment 90,000 lb. The power plant consists of one six-cylinder, 7½-in. bore by 8-in. stroke gasoline engine which delivers 250 hp. at 1,100 r.p.m. This is direct connected in turn with a 160-kw. 600-volt railway-type generator, which provides current for two 140-hp. railway-type motors. These are mounted on the front truck.

Keystone Company Is Absorbed by McGraw-Hill

Purchase of the Keystone Consolidated Publishing Company of Pittsburgh, Pa., by McGraw-Hill Company, Inc., publisher of the ELECTRIC RAILWAY JOURNAL, has been announced. The latter company thereby acquired the two Keystone mining catalogs, the



Guests of Brill and Westinghouse Companies at Demonstration of Gas-Electric Car

paid to the item of comfort in equipping this car for passenger service.

Upon the completion of the demonstration run in the morning, members of the party were driven to the Benjamin Franklin Hotel where a very tasteful luncheon was served. However, even without this additional courtesy those present were quite willing to vote the occasion a most interesting one.

Considering the fact that these gasoline-electric cars have only been placed on the market by the manufacturers for a short time—since last fall, in fact—the total of twenty cars sold is quite an imposing one and speaks well for the impression which the units are creating. The New Haven order of five cars is the largest thus far made.

coal catalogs, mining and quarrying directories and the list services published and conducted by the Keystone company.

There is thus brought into one organization the outstanding publishing interests serving the mining field. McGraw-Hill company with its magazines, *Coal Age* and *Engineering & Mining Journal-Press*, and the Keystone company with its catalogs, directories and list. *Coal Age* and *Engineering & Mining Journal-Press* have served the mining industries for more than two generations, and the purchase of the Keystone property will enable them to broaden and intensify that service.

Joseph J. Vigneau, the founder of

the Keystone Company, and until now its president, will continue in charge of the Keystone business for the McGraw-Hill Company with offices in Pittsburgh. Ralph C. Becker, hitherto vice-president of the Keystone Company, will continue in charge of the sales with headquarters in New York. Except for the retirement of Edward B. Day, New York representative, there will be no changes in the staff of the Keystone organization, but the service of the organization will be augmented by all the editorial and advertising resources and strength of the McGraw-Hill Company.

Progress in Stimulating Modernization

Progress is being made in the organization of the manufacturers' executive committee which will have general charge of the campaign to stimulate further development in car design and to bring about the replacement of obsolete equipment. Managing Director Storrs, who agreed at the last general meeting of car and equipment manufacturers to undertake the formation of this committee, has been giving the matter careful study. It is his plan to include in the personnel of the committee executives from leading manufacturers in the industry who will be in positions to speak authoritatively and to bring about general co-operation in executing plans that are formulated.

This committee will act as a clearing house to determine how the manufacturers can help the industry to modernize its equipment. A special sub-committee of experts, including J. A. Brooks of the J. G. Brill Company, C. A. Burleson of the General Electric Company and W. J. Clardy of the Westinghouse Electric & Manufacturing Company, which was organized on Dec. 14 under the chairmanship of G. C. Hecker, special engineer of the American Electric Railway Association, has been busy gathering information for its work. The services of these men have been donated by their respective companies. Their object will be primarily to gather information on the performance of modern electric railway cars and to stimulate further development and reduction in number of types and sizes of cars and equipment.

Material and information gathered by the committee will be given wide publicity in the industry. Many companies are preparing to co-operate in stimulating interest in car modernization by advertisements calling attention to the advantages of modern equipment.

480 New Cars and 75 Buses Needed at Detroit

The Department of Street Railways at Detroit, Mich., is now 150 cars short, will need 150 more cars for next year's business, should replace 180 cars now in use but considered unfit to run, and will need 75 more buses for the present routes. The cost of this equipment is estimated at \$7,000,000. The needs of the department were outlined by Col. H. U. Wallace, general manager of the Department of Street Railways, in a talk at the annual dinner of the officials

given on Dec. 28 by the governmental committee of the Detroit Board of Commerce.

In addition the need of new trackage was cited. It was stated that about \$1,500,000 will have to be spent to replace worn-out physical equipment. Although much work has been done in the past three years to improve the physical condition of the property purchased from the Detroit United Railway it was cited that more work is necessary.

Rolling Stock

Boston Elevated Railway, Boston, Mass., has announced specifications on the 60 subway cars referred to in the *ELECTRIC RAILWAY JOURNAL*, issue of Dec. 19 and Dec. 26, 1925. The details:

Date order was placed.....	December, 1925
Date of delivery.....	March, 1927
Builder of car body.....	Osgood-Bradley Car Company
Type of car.....	Passenger subway
Seating capacity.....	72
Weights:	
Car body.....	Approximately 40,000 lb.
Trucks.....	Approximately 22,300 lb.
Equipment.....	Approximately 20,100 lb.
Total.....	Approximately 82,400 lb.
Bolster centers, length.....	51 ft. 0 in.
Length over all.....	69 ft. 2 1/2 in.
Motor truck wheelbase.....	7 ft. 0 in.
Trailer truck wheelbase.....	6 ft. 0 in.
Width over all.....	9 ft. 6 in.
Body.....	All steel
Interior trim.....	Steel
Roof.....	Modified arch
Air brakes.....	Westinghouse
Axles.....	A. E. R. E. A. specification
Bumpers.....	Hedley anti-climbers
Car trimmings.....	Bronze
Center bearings.....	Truck builder
Side bearings.....	Stucl
Compressors.....	Westinghouse DH-25
Control.....	Westinghouse ALF
Couplers.....	Tomlinson-Ohio Brass Company
Door-operating mechanism.....	Electric
Gears and pinions.....	Westinghouse Electric & Manufacturing Company
Hand brakes.....	Vertical wheel, geared type
Heater equipment.....	Electric
Journal bearings.....	Plain
Journal boxes—Steel, 4 1/2 in. x 8 in. trailer, 5 in. x 9 in. motor	
Lightning arresters.....	Westinghouse
Motors, type and number.....	Two Westinghouse 577-P-1, inside hung
Oilers (for 20 motors).....	Rlco wedge-key axle caps
Seats.....	Longitudinal, made by B. E. Rwy.
Seating material.....	Wood slats
Springs.....	Wason Manufacturing Company
Trucks.....	Wason Manufacturing Company
Ventilators.....	Perry
Wheels.....	Trailer 31-in. steel; motor, 34-in. steel

Seattle, Wash.—The City Council has passed Councilman W. T. Campbell's bill providing for a \$1,800,000 issue of street railway utility bonds to finance purchase of 75 new street cars. D. W. Henderson, the superintendent, estimates that nearly \$300,000 a year can be saved by replacing 75 of the old type heavy cars with cars of a lighter type and for one-man operation. The measure as passed bore little resemblance to the original measure. That provided for a bond issue of \$3,500,000, of which \$2,000,000 was for paving between tracks and for track extensions. The Council held that this would be a burden too great for the department.

Northern Ohio Traction & Light Company, Akron, Ohio, has ordered 25 freight trailers from the Kuhlman Car Company, built in accordance with the specifications agreed to by the C.E.R. Master Mechanics' Association.

Michigan Railroad, Jackson, Mich., is now buying fifteen freight trailers equipped with Westinghouse WC-12 air brakes and standardized C.E.R.A. dia-

mond frame arch bar truck, with 33-in. steel wheels. The cars being purchased are in accordance with the standards as approved by the C.E.R. Master Mechanics' Association for freight trailers, with the exception that as the Michigan companies are hauling as high as twenty-car freight trains, it was considered advisable to specify the heavier type Tomlinson coupler, form 23, instead of the Tomlinson form 13, which has been standard on those properties.

Western Ohio Railway, Lima, Ohio, has placed an order with the Kuhlman Car Company of Cleveland, Ohio, for ten standardized freight trailers costing \$3,100 each. The specifications are those recently adopted by the C.E.R. Master Mechanics' Association.

Track and Line

New York State Railways, Rochester, N. Y., renewed more than 5 miles of track and pavement in 1925. Tracks and new pavement were laid on the following streets: Monroe Avenue, 11,872 ft. of track; Blossom Road, 3,541 ft.; Mount Hope Avenue, 2,904 ft.; Goodman Street, 3,000 ft. Extraordinary repairs were made at the following locations, where the rail was renewed and the pavement replaced: Commercial Street, 311 ft.; Franklin Street, 1,420 ft.; Caledonia Avenue, 306 ft.; Bronson Avenue Bridge, 200 ft.; Central Avenue, 500 ft.; Saratoga Avenue, 700 ft. There were no extensions of track made during the year of 1925, and two cross-overs were removed. During the year 4,000 ties were renewed with the corresponding number of bolts, plates and spikes and paving materials. Twenty-seven switches, nineteen mates and 41 frogs were renewed, as well as much guard rail in the special work layouts.

Spokane, Wash.—The Spokane & Eastern Railway & Power Company and the Spokane & Inland Empire Railway, interurban lines operated jointly out of Spokane, will expend about \$160,000 in improving roadway and bridges during 1926. New bridges will be constructed in Palouse and Colfax, Wash., and considerable track reconstruction will be undertaken this year.

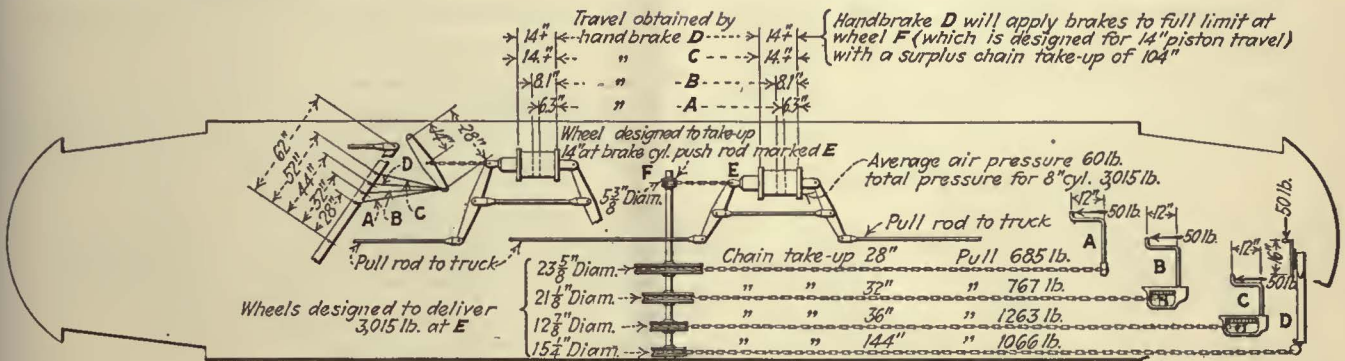
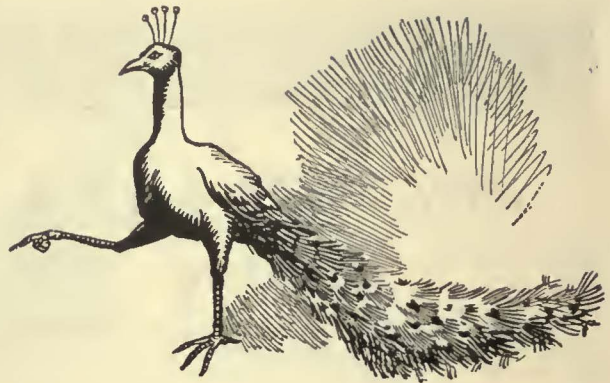
Trade Notes

Howell Van Blarcom has been appointed manager of the sales department of the Westinghouse Electric & Manufacturing Company at the South Philadelphia and Attica Works. R. E. Carothers has been appointed assistant manager. The large turbine sales section of the South Philadelphia Works will be conducted with A. H. Gamshird as manager. The small turbine section will be in charge of C. G. Ong, while P. L. Fetzer will be manager of the condenser section.

C. H. Lang, assistant manager of the publicity department of the General Electric Company, has become comptroller of budget for the company, a new position. Mr. Lang will pass upon the annual expense budget of the company and will report direct to the vice-presidents in charge of the several departments and to the comptroller.

Modernize your hand-brake ideas, also!

Notions about hand-brakes, current ten or fifteen years ago, are now as obsolete as those 25,000 cars the industry is discussing.



Hand Brake Layouts for Cars with 8-in. Brake Cylinders

Type of Hand Brake	Designated by Letter	Pull Delivered by Hand Brake	Braking Power at E	Maximum Chain Pull Obtained by Hand Brake	Chain Pull Required by Hand Brake for 14 In. Push Rod Travel	Maximum Travel of Push Rod at Point E	Surplus Chain Take-Up	Deficiency of Chain Take-Up	Remarks
Ordinary staff	A	685 lb.	3,015 lb.	28 in.	62 in.	6.3 in.	.....	34 in.	55 per cent less than required
Peacock, size A-B	B	767 lb.	3,015 lb.	32 in.	55 in.	8.1 in.	.....	23 in.	42 per cent less than required
Peacock, size E	C	1,263 lb.	3,015 lb.	36 in.	34 in.	14. + in.	2 in.	.....	5.8 per cent more than required
Peacock, staffless	D	1,066 lb.	3,015 lb.	144 in.	40 in.	14. + in.	104 in.	.....	260 per cent more than required

Consider the conditions shown above

PEACOCK STAFFLESS BRAKES



Obsolete hand-brake equipment is just as much a problem as the obsolete cars. Many a new car has had old and ineffective hand brakes installed, on the indifferent theory that they were "good enough."

Light weight cars and higher speeds have imposed new conditions on hand brakes, which the old types will not meet. Particularly is this true, of chain-winding capacity. In the above illustration, four different types of brakes are illustrated, only two of which will be effective at all times.

When thinking of modern cars, think of modern hand-brakes, also!

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1. Oil Reservoir. Positively retains oil or grease and is exclusively a 13-E feature. To fill, remove the flathead screw shown in top of swivel cap.
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3. Races—Inner and Outer. The races are made of "SHELBY" tubing, machined, hardened and ground.
4. Trigger Lock. Locks Pole Socket in horizontal position, enabling one man to change poles in the barn under low headroom.
5. Buffer Spring. Cushions the pole socket in case the wheel leaves wire.
6. Terminal Connector. Cast Bronze Connector for sweating to Motor Lead insuring good contact. Clamp type furnished if preferred.
7. Pole Socket Bearing. Hardened Steel Bushing maintaining indefinitely a good close fit with axle pin No. 11.
8. 2-Bolt Pole Socket. Two bolts insure firmer grip and require less time for applying pole.
9. Adjusting Screw. One adjustment for all four springs.
10. Shunts. Heavy phosphor bronze straps for shunting the current from Pole Socket and Swivel to Base.
11. Axle Pin. Pole Socket Axle Pin made of hardened steel.
12. Dust Guard. Protects Roller Bearing from dust and water.
13. Accessibility. By removing these heavy locking screws and unhooking springs, the bearing cap can be removed, exposing swivel portion of base.



R.D. NUTTALL COMPANY
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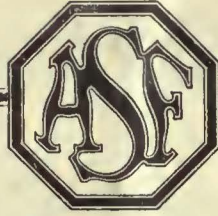
When writing the advertiser for information or prices, a mention of the Electric Railway Journal would be appreciated.



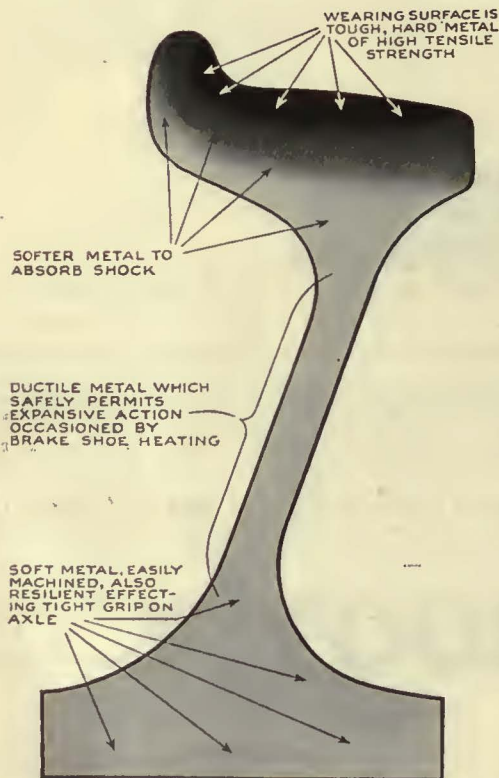
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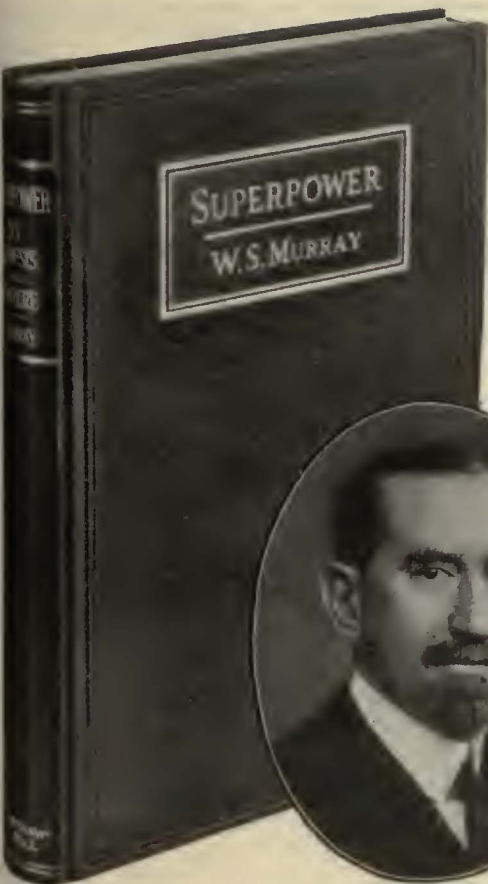
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* A proper distribution of required physical properties.

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PITTSBURGH - PENNA.

*Bethlehem Products for
Electric Railways*

Frogs, Switches,
Special Track
Work, Rails, Car
Wheels, Gear
Blanks, Axles, Arm-
ature Shafts,
Splice Bars, Bolts,
Spikes, Track Ac-
cessories and Pole
Line Hardware.

Hard Center Frog, Ironbound Type, Design 942

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
BETHLEHEM

BARBOUR-STOCKWELL CO.
205 Broadway, Cambridgeport, Mass.
Established 1858

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Special Work for Street Railways
Frogs, Crossings, Switches and Mates
Turnouts and Cross Connections
Kerwin Portable Crossovers
Balkwill Articulated Cast Manganese Crossings

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Rail Bonds**
AND ALL OTHER TYPES

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**Lorain Special Trackwork
Girder Rails**
Electrically Welded Joints

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Johnstown, Pa.

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Hubbard makes the Hardware*



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COMBINE

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Least Maintenance

Lightest Weight
Greatest Adaptability

Catalog complete with engineering data sent on request.

ELECTRIC RAILWAY EQUIPMENT CO.
CINCINNATI, OHIO

New York City, 30 Church Street

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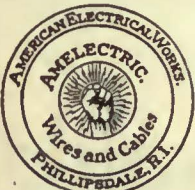
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SUPERINTENDENT transportation, qualified by a wide experience and successful record on large city and interurban properties; successful in handling labor. Public relations, safety campaigns, etc., recognized as an efficient, progressive official fully capable of getting results. At present engaged. Personal reasons for desiring change. High-class references from leading executives. Correspondence invited. PW-858, Electric Railway Journal, 401 Guardian Bldg., Cleveland, Ohio.

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New aluminum 21-passenger special street car type body, for Studebaker, mounted on chassis. Body price, \$2,150, plus tax. *For particulars write*

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- 20—Birney Safety Cars. Brill built. Seating 32.
- 8—Steel Interurbans, 48 ft. long. Seating 52.

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 SECURES
 SATISFACTORY
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G-23

4 High Grade, High Speed, 56 PASSENGER COMBINATION (Smoking and Baggage) CARS

Exceptionally Good for Interurban Service
 All in excellent condition. Built by Kuhlman. Length over all, 57 ft. Height over trolley board, 12 ft. 5 in. Height over all, 13 ft. 10 in. Number of seats, 26. Type of motors, four G. E. 205. Make of trucks, Brill. Wheel base, 7 ft. Controller, G.E.—MC-74. Toilets, 34x36-in. Air Compressor, WH-D-2.
 For illustration of these cars, see our advertisement in the January 2nd issue of this publication. Watch for future announcements of other types of cars.

J. W. GERKE, *Railway Equipment*
 303 Fifth Ave., New York City

ROTARY CONVERTERS

4—300-kw. Westinghouse, 600 volts D.C., 6 phase, 60 cycle. Each unit complete with panelboard and instruments and 33,000 volt step down transformers. Excellent condition.
 3500—Metal Trolley Pole Arms or Hangers.
HYMAN-MICHAELS COMPANY
 Peoples Gas Building, Chicago, Illinois.

If there is anything you want—

or something you don't want that *other* readers of this paper can supply—or use—advertise in the



Somebody is always looking for something to meet certain business needs. Some men in charge of plant operations may be in the market for good used equipment—others may have just what they want, to sell. Some may require a man of unusual quali-

fications for a particular position—that man may be another reader of this paper!

Put the Searchlight Section to work for you under any of the following classifications—to fill your business needs.

- Agencies Wanted
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- Civil Service Opportunities
- Contracts To Be Let

- Contracts Wanted
- Educational Courses
- Employment Agencies
- Exchanges
- For Rent Items
- Franchises
- Industrial Sites

- Miscellaneous Wants
- New Industries Wanted
- Partners Wanted
- Patents For Sale
- Patent Attorneys
- Plants For Sale
- Positions Vacant

- Positions Wanted
- Property For Sale
- Receivers' Sales
- Representatives Wanted
- Salesmen Wanted
- Work Wanted
- Etc., Etc., Etc.

“Searchlight” is the “Opportunity”
 advertising of this industry.

WHAT AND WHERE TO BUY

Equipment, Apparatus and Supplies Used by the Electric Railway Industry
with Names of Manufacturers and Distributors Advertising in this Issue

Advertising, Street Car
Collier, Inc., Barron G.

Anchors, Guy
Elec. Service Supplies Co.
Ohio Brass Co.
Westinghouse E. & M. Co.

Armature Shop Tools
Elec. Service Supplies Co.

**Automatic Return Switch
Stands**
Ramapo Ajax Corp.

**Automatic Safety Switch
Stands**
Ramapo Ajax Corp.

Axles
Bethlehem Steel Co.
Brill Co., The J. G.
Carnegie Steel Co.
Johnson & Co., J. R.
Westinghouse E. & M. Co.

Axles, Carbon Vanadium
Johnson, J. R.

Axles, Car Wheel
Bethlehem Steel Co.

Axles, Steel
Carnegie Steel Co.
Johnson, J. R.

Badges and Buttons
Elec. Service Supplies Co.
International Register Co.,
The

Bearings and Bearing Metals
Brill Co., J. G., The
General Electric Co.
Westinghouse E. & M. Co.

**Bearings, Center and Roller
Side**
Stuckl Co., A.

Bells and Gongs
Brill Co., The J. G.
Consolidated Car Heat. Co.
Elec. Service Supplies Co.

Bodies, Bus
Auto Body Co.
Cummings Car & Coach Co.
Graham Bros.
Long Body Co.

**Body Material, Haskellite and
Plymet**
Haskellite Mfg. Corp.

Bolters
Babcock & Wilcox Co.

Bond Testers
American Steel & Wire Co.

Bonding Apparatus
Amer. Steel & Wire Co.
Elec. Service Supplies Co.
Ohio Brass Co.
Railway Track-work Co.

Bonds, Rail
Amer. Steel & Wire Co.
Elec. Service Supplies Co.
General Electric Co.
Ohio Brass Co.
Railway Track-work Co.
Westinghouse E. & M. Co.

Book Publishers
McGraw-Hill Book Co.

**Brackets and Cross Arms
(See also Poles, Ties,
Posts, Etc.)**
Elec. Ry. Equipment Co.
Elec. Service Supplies Co.
Hubbard & Co.
Ohio Brass Co.

Brake Adjusters
Brill Co., The J. G.
National Ry. Appliance Co.
Westinghouse Tr. Br. Co.

Brake Shoes
Amer. Br. Shoe & Fdy. Co.
Barbour-Stockwell Co.
Bemis Car Truck Co.
Brill Co., The J. G.

**Brakes, Brake Systems and
Brake Parts**
Brill Co., The J. G.
General Electric Co.
National Brake Co.
Westinghouse Tr. Br. Co.

Brooms, Wire & Rattan
Paxson Co.

Brushes, Carbon
General Electric Co.
Jensdron, W. J.
Le Carbone Co.
Westinghouse E. & M. Co.

Bulkheads
Haskellite Mfg. Corp.

Bus Seats
Bender Body Co.
Hale-Kilburn Co.
S. Karpan & Bros.

Buses, Motor
Brill Co., The J. G.
Mack Trucks
White Company

**Bushings, Case Hardened
and Manganese**
Brill Co., The J. G.

**Cables, (See Wires and
Cables)**

**Cambric Tapes, Yellow and
Black Varnish**
Irvington Varnish & Ins.
Co.

**Carbon Brushes (See
Brushes, Carbon)**

Cars, Dump
Brill Co., J. G., The
Differential Steel Car Co.

Car Lighting Fixtures
Elec. Service Supplies Co.

Car Panel Safety Switches
Consolidated Car Heat. Co.
Westinghouse E. & M. Co.

Car Wheels, Rolled Steel
Bethlehem Steel Co.

**Cars, Passenger, Freight,
Express, etc.**
Amer. Car Co.
Brill Co., The J. G.
Kuhlman Car Co., G. C.
National Ry. Appliance Co.
Wason Mfg. Co.

Cars, Gas, Rail
Brill Co., J. G., The

Cars, Second Hand
Electric Equipment Co.
Transit Equipment Co.

Cars, Self-Propelled
Brill Co., J. G., The
General Electric Co.

**Castings, Gray Iron and
Steel**
Wm. Wharton, Jr. & Co.

**Castings, Malleable and
Brass**
Amer. Br. Shoe & Fdy. Co.
Horne & Ebling Corp.

Catchers and Retrievers,
Driver-Harris Co.
Elec. Service Supplies Co.
Ohio Brass Co.
Wood Co., Chas. N.

Catenary Construction
Archbold-Brady Co.

Celling Car
Haskellite Mfg. Corp.
Pantasote Co., Inc.

Ceilings, Plywood, Panels
Haskellite Mfg. Co.

Change Carriers
Cleveland Fare Box Co.
Elec. Service Supplies Co.

Circuit-Breakers
General Electric Co.
Westinghouse E. & M. Co.

**Clamps and Connectors for
Wires and Cables**
Elec. Ry. Equipment Co.
Elec. Ry. Improvement Co.
Elec. Service Supplies Co.
General Electric Co.
Hubbard & Co.
Ohio Brass Co.
Westinghouse E. & M. Co.

**Cleaners and Scrapers Track
(See also Snow-Plows,
Sweepers and Brooms)**
Brill Co., The J. G.
Root Spring Scraper Co.

Clusters and Sockets
General Electric Co.

**Coal and Ash Handling (See
Conveying and Hoisting
Machinery)**

**Coil Banding and Winding
Machines**
Elec. Service Supplies Co.

Colls, Armature and Field
General Electric Co.
Westinghouse E. & M. Co.

Colls, Choke and Klinking
Elec. Service Supplies Co.
General Electric Co.
Westinghouse E. & M. Co.

Coin Counting Machines
Cleveland Fare Box Co.
Intern'l Register Co.
Johnson Fare Box Co.

Coin Sorting Machines
Cleveland Fare Box Co.

Coin Wrappers
Cleveland Fare Box Co.

Commutator Slatters
Elec. Service Supplies Co.
General Electric Co.
Westinghouse E. & M. Co.

Commutator Truing Devices
General Electric Co.

Commutators or Parts
Cameron Elec'l Mfg. Co.
General Electric Co.
Westinghouse E. & M. Co.

**Componads (Insulating and
Splicing)**
Johna-Manville, Inc.

Compressors, Air
General Electric Co.
Westinghouse Tr. Br. Co.

Concrete Flooring Surface
Irving Iron Works

Condenser Papers
Irvington Varnish & Ins.
Co.

Condensers
General Electric Co.
Westinghouse E. & M. Co.

Connectors, Solderless
Westinghouse E. & M. Co.

Connectors, Trailer Car
Consolidated Car Heat. Co.
Elec. Service Supplies Co.
Ohio Brass Co.

Controllers or Parts
General Electric Co.
Westinghouse E. & M. Co.

Controller Regulators
Elec. Service Supplies Co.

Controlling Systems
General Electric Co.
Westinghouse E. & M. Co.

Converters, Rotary
General Electric Co.
Westinghouse E. & M. Co.

Copper Wire
Anaconda Copper Mining
Co.

**Copper Wire Instruments,
Measuring, Testing and
Recording**
American Steel & Wire Co.

Cord, Bell, Trolley, Register
Brill Co., The J. G.
Elec. Service Supplies Co.
Internatl Register Co.,
The
Roebbling's Sons Co., John
A.

**Cord Connectors and
Couplers**
Elec. Service Supplies Co.
Samson Cordage Works
Wood Co., Chas. N.

Couplers, Car
Brill Co., The J. G.
Ohio Brass Co.
Westinghouse Tr. Br. Co.

Cross Arms (See Brackets)

Crossing Foundations
International Steel Tie Co.

Crossing, Frog & Switch
Ramapo Ajax Corp.
Wm. Wharton, Jr. & Co.

Crossing, Manganese
Bethlehem Steel Co.
Ramapo Ajax Corp.
Wm. Wharton, Jr. & Co.

Crossings
Ramapo Ajax Corp.
Wm. Wharton, Jr. & Co.

**Crossing, Track (See Track,
Special Work)**

Crossings, Trolley
Ohio Brass Co.
Westinghouse E. & M. Co.

Curtains & Curtain Fixtures
Brill Co., The J. G.
Morton Mfg. Co.
Pantasote Co., Inc.

**Dealer's Machinery & Second
Hand Equipment**
Elec. Equipment Co.
Gerke, J. W.
Hyman-Michaels
Derailing Devices (See also
Track Work)

Derailing Switches
Ramapo Ajax Corp.

Destination Signs
Elec. Service Supplies Co.

Detective Service
Wish-Service, P. Edward

Door Operating Devices
Brill Co., The J. G.

Consolidated Car Heat. Co.
General Electric Co.
Nat'l Pneumatic Co., Inc.
St. Louis Car Co.

Doors & Door Fixtures
Brill Co., The J. G.
Consolidated Car Heat. Co.
Hale-Kilburn Co.
General Electric Co.
Morton Mfg. Co.

Doors, Folding Vestibule
Nat'l Pneumatic Co., Inc.
Safety Car Devices Co.

Drills, Track
Amer. Steel & Wire Co.
Elec. Service Supplies Co.
Ohio Brass Co.

Dryers, Sand
Elec. Service Supplies Co.

Ears
Electric Service Supplies Co.
Ohio Brass Co.
Westinghouse E. & M. Co.

Electrical Wires and Cables
Amer. Electrical Works
Amer. Steel & Wire Co.

Electric Grinders
Railway Track-work Co.
Western Electric Co.

Electrodes, Carbon
Railway Track-work Co.

Electrodes, Steel
Railway Track-work Co.

Enamel
Luca & Co., John

**Engineers, Consulting, Con-
tracting and Operating**
Allison & Co., J. S.
Archbold-Brady Co.
Beeler, John A.
Buchanan & Laving Corp.
Bureau of Commercial
Economics, Inc.
Eylleby Co., H. M.
Day & Zimmermann, Inc.
Ford, Bacon & Davis
Hemphill & Wells
Holst, Engelhardt W.
Jackson, Walter
Kelker & DeLeuw
McClellan & Junkersfeld
Ong, Joe R.
Railway Audit & Inspec-
tion Co.
Richey, Albert S.
Sanderson & Porter
Stevens & Wood
Stone & Webster
White Eng. Corp., The
J. G.

Engines, Gas, Oil or Steam
Westinghouse E. & M. Co.

Exterior Side Panels
Haskellite Mfg. Corp.

Fare Boxes
Cleveland Fare Box Co.
Johnson Fare Box Co.
Perry Mfg. Co.
Nat'l Ry. Appliance Co.

Fare Registers
Electric Service Supplies Co.
Ohmer Fare Register Co.

**Fences, Woven Wire and
Fence Posts**
Amer. Steel & Wire Co.

Fenders and Wheel Guards
Brill Co., The J. G.
Consolidated Car Fender Co.
Root Spring Scraper Co.

Fibre and Fibre Tubing
Westinghouse E. & M. Co.

Field Coils (See Coils)

Flangeway Guards, Steel
W. S. Godwin Co., Inc.

Floodlights
Elec. Service Supplies Co.

Floor, Sub
Haskellite Mfg. Corp.

Floors
Haskellite Mfg. Corp.

Forgings
Brill Co., J. G., The
Frogs & Crossings, Tee Rail
Bethlehem Steel Co.
Ramapo Ajax Corp.
Wm. Wharton, Jr. & Co.

**Frogs, Track (See Track
Work)**

Frogs, Trolley
Electric Service Supplies Co.
Ohio Brass Co.
Westinghouse E. & M. Co.

Funnell Castings
Wm. Wharton, Jr. & Co.,
Inc.

Fuses and Fuse Boxes
Consolidated Car Heat. Co.
General Electric Co.
Westinghouse E. & M. Co.

Fuses, Refillable
General Electric Co.

Gaskets
Westinghouse Tr. Br. Co.

Gas Producers
Westinghouse E. & M. Co.

Gas-Electric Cars
General Elec. Co.
Westinghouse E. & M. Co.

Gates, Car
Brill Co., The J. G.

Gear Blanks
Bethlehem Steel Co.
Brill Co., J. G., The

Gear Cases
Chillingworth Mfg. Co.
Westinghouse E. & M. Co.

Gears and Pinions
Bemis Car Truck Co.
Bethlehem Steel Co.
Electric Service Supplies Co.
General Electric Co.
Nat'l Ry. Appliance Co.
Nuttall Co., R. D.
Tool Steel Gear & Pinion
Co.

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General Electric Co.

Generators
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Greases (See Lubricants)

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Grinders, Portable Electric
Railway Track-work Co.

Grinding Bricks and Wheels
Railway Track-work Co.

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Ramapo Ajax Corp.
Wm. Wharton, Jr. & Co.

**Guard Rails, Tee Rail &
Manganese**
Ramapo Ajax Corp.
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Elec. Service Supplies Co.
Ohio Brass Co.

Happs, Trolley
Elec. Service Supplies Co.
Nuttall Co., R. D.
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Haskellite Mfg. Corp.
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Consolidated Car Heat. Co.
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Nat'l Ry. Appliance Co.
Smith Heater Co., Peter

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Water**
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Irvington Varnish & Ins.
Co.
Okonite Co.
Gkonite-Callender Cable Co.
Stand. Callender Cable
Co.
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Westinghouse E. & M. Co.

Insulating, Silk & Varnish
Irvington Varnish & Ins.
Co.

Insulation (See also Paints)
Electric Ry. Equipment
Co.
Elec. Service Supplies Co.
General Electric Co.
Irvington Varnish & Ins.
Co.
Okonite Co.
Gkonite-Callender Cable Co.
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Westinghouse E. & M. Co.

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Co.

**Insulators (See also Line
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Co.
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KASS SAFETY TREADS
 HIGH
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Ramapo Ajax Corporation

RACOR

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 FOR PASSING SIDINGS
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THE BEST TRUSS PLANK ELECTRIC HEATER EVER PRODUCED



No. **478E**

GOLD CAR HEATING & LIGHTING CO., BROOKLYN, N. Y.

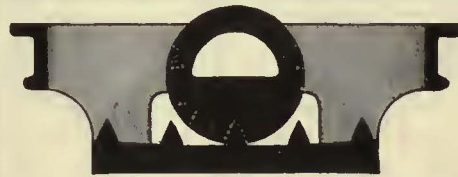
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 HASKELITE mahogany interior linings and bulkheads were used on cars built by the Milwaukee Electric Railway and Light Company, Milwaukee, Wis.

HASKELITE MFG. CORPORATION
 133 W. Washington St., Chicago, Illinois.

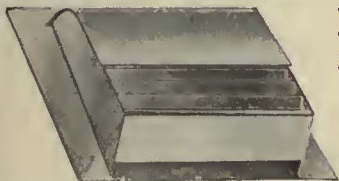
RAIL GRINDERS AND WELDERS

Railway Track-work Co., Philadelphia 682



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A. STUCKI CO.
 Oliver Bldg.
 Pittsburgh, Pa.



N-L Ventilators
 for Cars and Buses



The Nichols-Lintern Co.
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 WESTERN & NORTHERN CEDAR
NAUGLE POLE & TIE CO.
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 New York • Columbus • Kansas City • Spokane • Vancouver • Boston

CHILLINGWORTH

One-Piece Gear Cases
 Seamless—Elvotless—Light Weight
 Best for Service—Durability and Economy. Write Us.

Chillingworth Mfg. Co.
 Jersey City, N. J.



Car Heating and Ventilation

are two of the winter problems that you must settle without delay. We can show you how to take care of both, with one equipment. Now is the time to get your cars ready for next winter. Write for details.

The Peter Smith Heater Company
 6209 Hamilton Ave., Detroit, Mich.

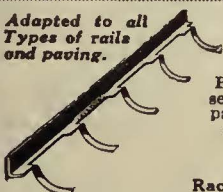
"Axle Specialists Since 1866"
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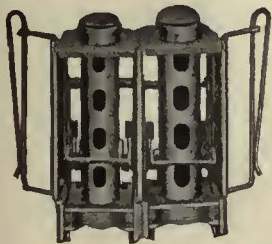
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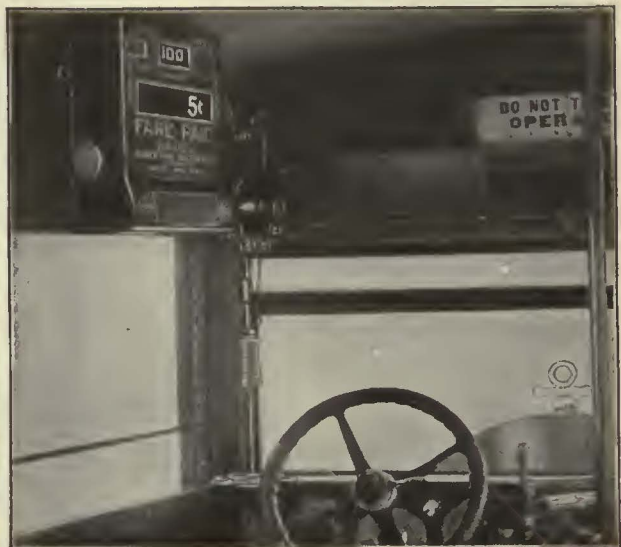
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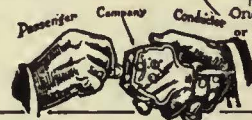
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ALPHABETICAL INDEX TO ADVERTISEMENTS

	Page		Page		Page								
A													
Allison Co., J. E.....	21	Electric Ry. Equipment Co....	28	K									
Amer. Brake Shoe & Fd. Co....	26	Electric Service Supplies Co....	9	Kelker, DeLeuw & Co.....	21								
American Brass Co., The.....	28	F		Kuhlman Car Co.....	35								
American Car Co.....	35												
American Electrical Works....	28												
American Steel Foundries.....	22												
American Steel & Wire Co....	27												
Anaconda Copper Mining Co....	28												
Archbold-Brady Co.....	20												
B													
Babcock & Wilcox Co.....	27												
Barbour-Stockwell Co.....	27												
Beeler Organizatoin.....	20												
Bell Lumber Co.....	31												
Bethlehem Steel Co.....	27												
Brill Co., The J. G.....	35												
Buchanan & Layng Corp.....	20												
Byllesby Engineering & Manage- ment Corp.....	20												
C													
Cameron Electrical Mfg. Co....	21												
Carnegie Steel Co.....	27												
Chillingworth Mfg. Co.....	31												
Cleveland Fare Box Co.....	33												
Coller, Inc., Barron G.....	25												
Consolidated Car Fender Co....	31												
Consolidated Car Heating Co... 34													
D													
Day & Zimmerman, Inc.....	20												
Differential Steel Car Co., The..	26												
E													
Electric Equipment Co.....	29												
H													
Hale-Kilburn Co.....	34												
Haskelte Mfg. Corp.....	31												
"Help Wanted" Ads.....	29												
Hemphill & Wells.....	20												
Holst, Englehardt W.....	20												
Hubbard & Co.....	28												
Hyman-Michaels Co.....	29												
I													
International Register Co., The..	33												
International Steel Tle Co., The..	7												
Irrington Varnish & Insulator Co.....	28												
J													
Jackson, Walter.....	20												
Jeandron, W. J.....	20												
Johnson & Co., Inc., J. R.....	31												
Johnson Fare Box Co.....	33												
L													
M													
N													
O													
P													
R													
S													
T													
U													
W													

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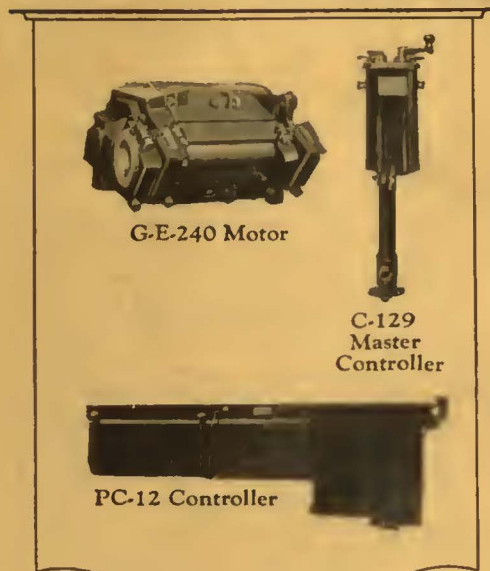
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