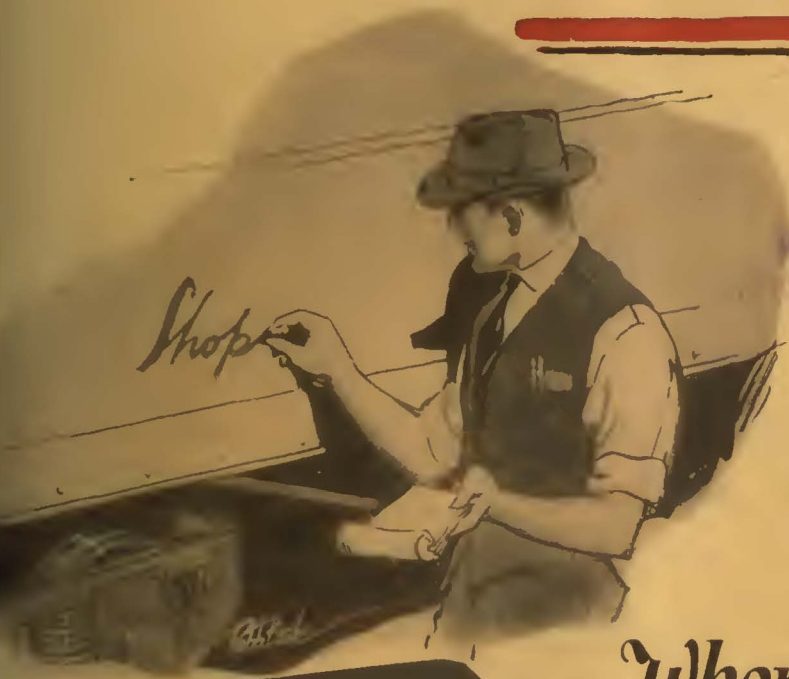


ELECTRIC RAILWAY JOURNAL



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HOUSTON, TEXAS

When Rolling Stock Ceases to Roll ↗

A dead loss!

And, perhaps, an avoidable loss too—with the STACKPOLE Carbon Brush.

Longer brush life, less side-wear, perfect commutation—these are some of the attributes of the STACKPOLE Brush.

STACKPOLE Grade L-30 is the result of an intensive special study of traction brush requirements. It gives absolute freedom from chipping and pitting. It assures greater economy and longer "rolling-stock life."

Send today for STACKPOLE Catalog No. 8

STACKPOLE CARBON COMPANY
ST. MARYS, PENNA.



Stackpole
carbon brushes
the Better Brushes with
the Longer Life



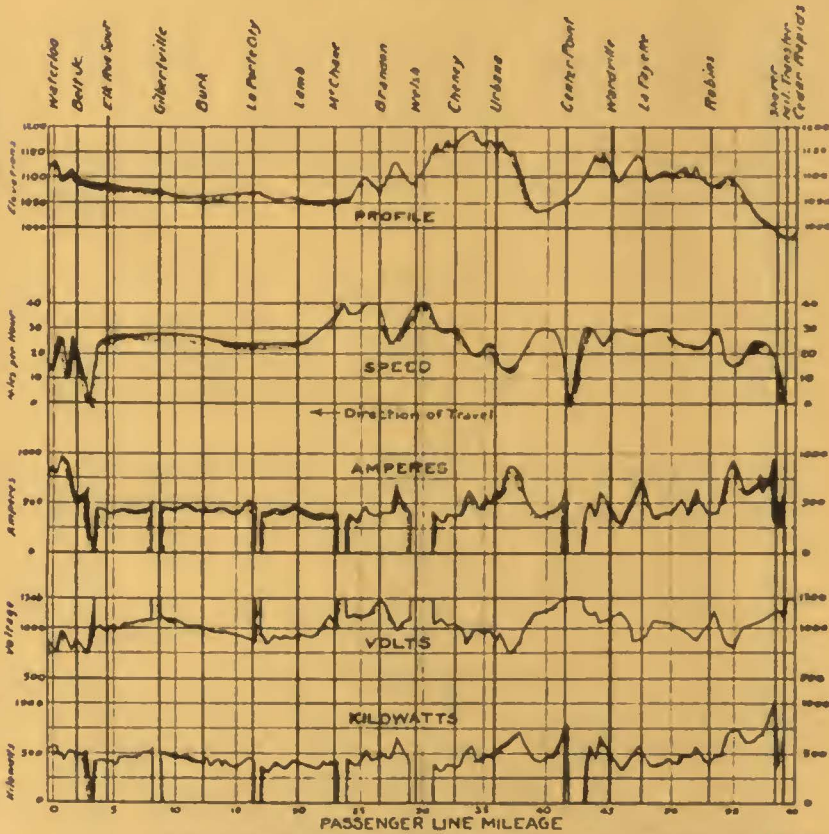
Figure It Out!

This is a performance diagram of the 850 ton, eleven-car excursion train of the Milwaukee Association of Commerce between Cedar Rapids and Waterloo, Iowa, on May 21, 1924, hauled by two standard 60 ton Baldwin-Westinghouse locomotives over the Waterloo, Cedar Falls and Northern Railway.

Ten interurban railways, operating a total of 56 locomotives, report an average figure of locomotive maintenance of 6.25 cents per locomotive mile.

If these figures applied to freight interchange service with connecting steam roads, would it be profitable?

FIGURE IT OUT!



Average Grade, 0.044%	Total Kilowatt Hours, at Car, 1191	Total Coal Pile Power Cost \$11.00
Average Speed, 24 m.p.h.	Weight of Train (not incl. Loco) 850 T.	Motive Power, Two 100 Cl. Loco.
Average Amperes, 519 (at car)	WEP Hours per Ton Mile, at Car 23.7	Trolley and Rail Losses 23.2%
Average Voltage 392 - -	- - - - - " - - - - - " - - - - - " - - - - - " - - - - - "	Trans. & Converter 12.3%
Average Kilowatts 516 - -	Coal Pile Cost per Ton-Mile 0021¢	Approx Total Losses 35.5%

PERFORMANCE DIAGRAM
11 CAR STEEL PASSENGER TRAIN
CEDAR RAPIDS TO WATERLOO
MAY 21, 1924.



The Baldwin Locomotive Works
Philadelphia, Pa.
Westinghouse Electric & Manufacturing Co.
East Pittsburgh, Pa.



Baldwin-Westinghouse

ELECTRIC RAILWAY JOURNAL

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

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Associate Editor

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40 Years of Service

IN THE leading text pages of this week's issue is told the story of ELECTRIC RAILWAY JOURNAL—how it has grown in its 40 years, almost the entire lifetime of the street railway industry. Its influence in the development of the electric railway and transportation in general has been potent.

But this is not the whole picture. This editorial service has been accompanied by another important service to the readers. The advertising pages all these years have been telling of the equipment and devices that have made progress possible. Manufacturers and dealers have realized that the pages of the JOURNAL furnished the surest means of getting the attention and interest of the responsible railway men. All have profited thereby.

Modernization goes on. What is new today is old tomorrow. The youngsters of today will be the leaders of tomorrow. It is our job to acquaint them with methods and practices that represent the experience of 40 years. And the new things to come must be described to old and to young alike.

This issue tells something of the past 40 years. But the JOURNAL has its face toward the next 40 years, for it sees a further great development of the industry—both railway and highway. It is building for the future, with its 40 years experience as a guide to future leadership.

McGraw-Hill Company, Inc., Tenth Ave. at 36th St., New York

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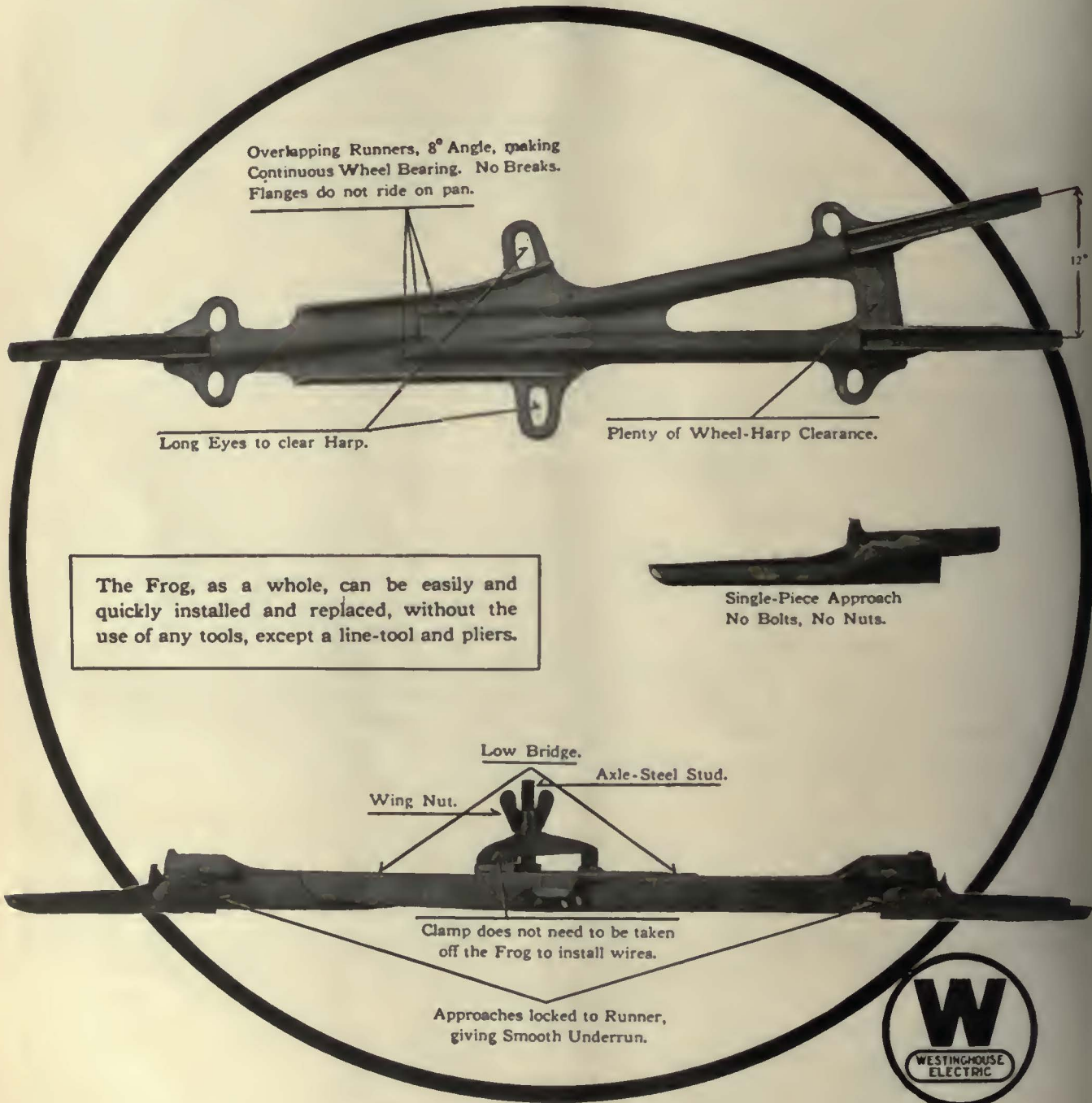
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Printed, 1924, by McGraw-Hill Company, Inc.
Published weekly. Entered as second-class matter, June 23, 1908, at the Post Office, New York, under the Act of March 3, 1879. Printed in U.S.A.

The CF Frog with Bayonet Approach Quickly Installed



The Frog, as a whole, can be easily and quickly installed and replaced, without the use of any tools, except a line-tool and pliers.

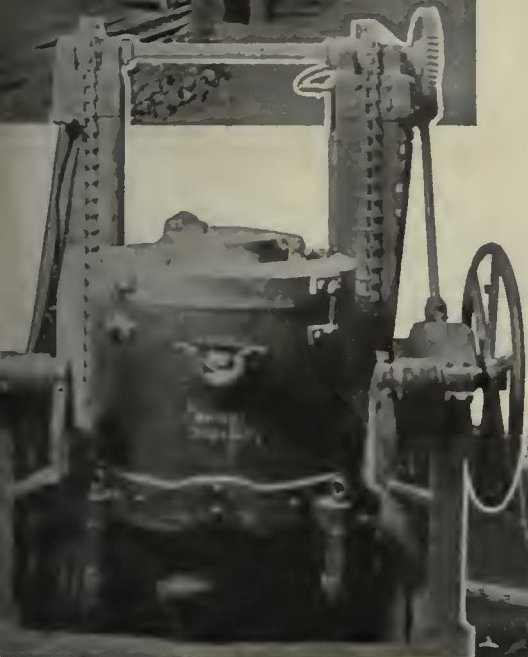
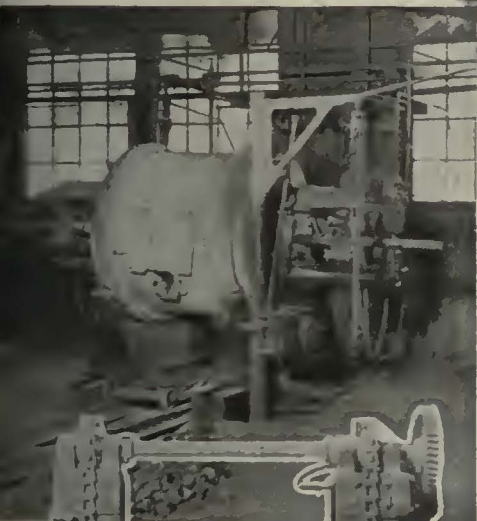
Low Bridge.
 Axle-Steel Stud.
 Wing Nut.
 Clamp does not need to be taken off the Frog to install wires.
 Approaches locked to Runner, giving Smooth Underrun.



Westinghouse Electric & Manufacturing Company
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 Sales Offices in all Principal Cities of the
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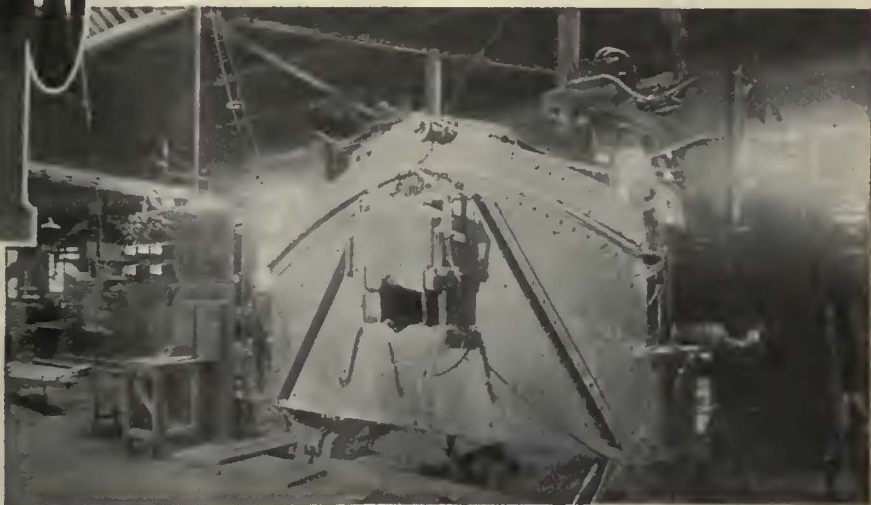
A MANUFACTURING SERVICE FOR THE INDUSTRY



ELECTRIC FURNACES

Electric Furnaces take their place in the O-B Manufacturing process because they lead to more ideal foundry conditions—especially from the humane standpoint.

But even so, the quality of O-B Bronze depends on how the metal is handled in these furnaces, and in the pouring. The constant supervision of skilled metallurgists over these processes brings to users of O-B Bronze Products the expected qualities with which the O-B name is associated.



The Ohio O-B Brass Co.

Mansfield,

Ohio, U.S.A.

COLEMAN MATERIAL - ELECTRIC RAILWAY CAR EQUIPMENT - RAIL BONDS - HIGH TENSION PORCELAIN INSULATORS - THIRD RAIL INSULATORS

Dominion Insulator & Mfg. Co., Limited



NEW YORK - PHILADELPHIA - PITTSBURGH
CHICAGO - CHARLESTON, W. VA.
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Niagara Falls, Ontario, Canada

Noise is waste

Noise isn't merely objectionable, it's wasteful. It's an indication of wasted energy and an excessive rate of deterioration of one or more parts of the railway property. Where there's noise there's wear.

Bad track is at least as likely as bad cars to be a nuisance. Even bad cars are quieter on good track. Even good cars are noisy on bad track. Electric Railway Journal wisely says:

“Corrugated rail, loose switches and worn-out crossings should receive prompt attention or the reputation of the railway will suffer.”

And here's the approved equipment for keeping track at its best.

Write for quotation now

Railway Trackwork Co.

3132-48 East Thompson Street, Philadelphia

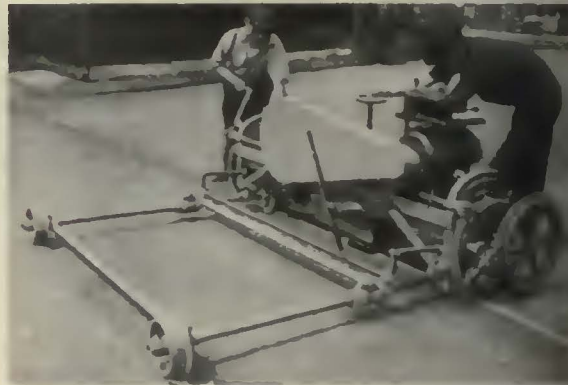
AGENTS:

Chester F. Gailor, 30 Church St., New York
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(333)



"Reelproating" Track Grinder



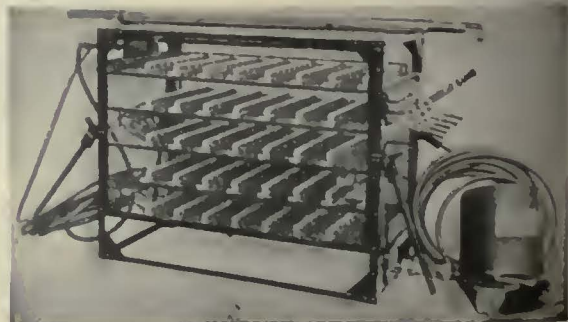
"Vulcan" Rail Joint Grinder



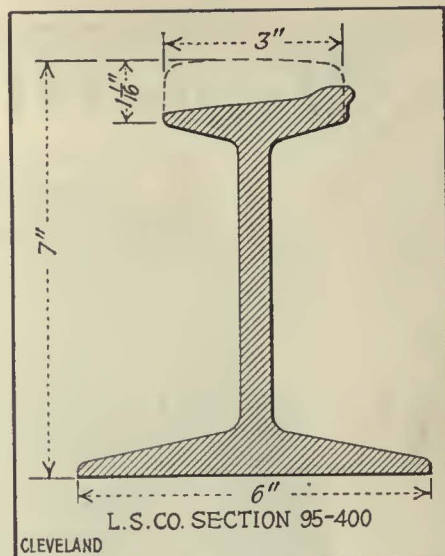
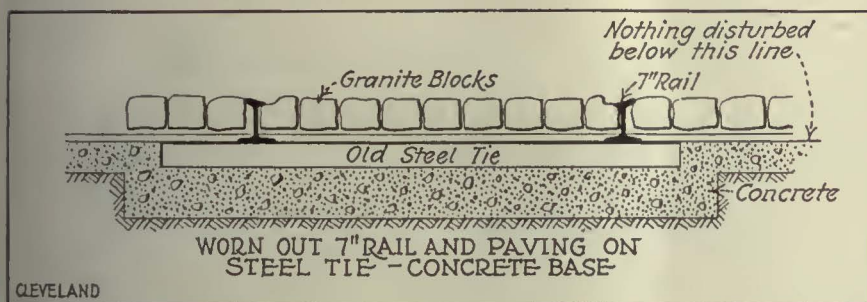
"Atlas" Rail Grinder



"Hercules" Swing Frame Rail Grinder

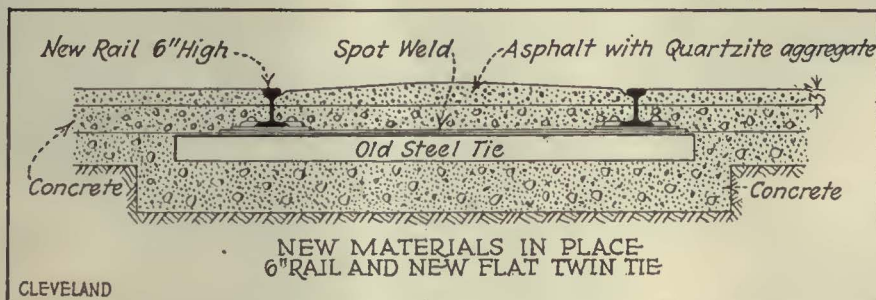


"Ajax" Electric Arc Welder



Cross Section of Rail on Euclid Ave., Cleveland, Showing Wear on Ball of Rail

Cross Section Showing Details of Track Construction on Euclid Avenue, Cleveland. Rail Worn Out, Concrete Base Still in Good Condition.



Details of method of Replacing Rail on Old Concrete Base, Using Special Flat Steel Twin Ties.

Low Cost Construction that Outlasts the Rail

The most startling development in track construction for paved streets has been successfully worked out during the past two years in the renewal of rail and paving on a Steel Tie Concrete Base.

Planning your new paved track for renewal by using Steel Twin Tie Construction will require no large investment in initial cost. Our definite cost records for 1924 show costs as low as \$8.35 per single track foot for the track complete, including removal of the old construction and concrete paving surface.

For conservative-minded executives who have questioned the comparative life of concrete construction there is a complete answer in the reconstruction of such track at the end of a satisfactory rail life in Cleveland and elsewhere.

In planning 1925 paved track construction investigate the low cost paved track construction that outlasts the rail with all assurance that asking us to present all the data by personal call or in the mail will involve no persistent or annoying solicitation.

The International Steel Tie Co., Cleveland, Ohio

Steel Twin Tie Track

Renewable Track . . . Permanent Foundation

Modern Signal Protection



Electro-Pneumatic
Interlocking at
Terminal Station
of Philadelphia &
West Chester
Traction Co.

At the new Philadelphia Terminal Station of the Philadelphia & West Chester Traction Co., UNION ELECTRO-PNEUMATIC INTERLOCKING allows car movements to be speeded up and insures against confliction of simultaneous movements.

Let one of our engineers study your operating conditions and co-operate with you in considering what Interlocking and Automatic Block Signals will do for your Railway.



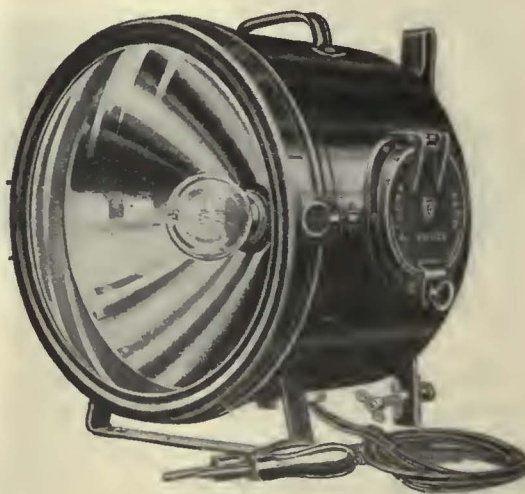
Union Switch & Signal Co.

SWISSVALE, PA.





Dash Type



Portable Type

GOLDEN GLOW

Powerful non-glaring headlights

KNOwn wherever they're seen, by their characteristic soft but penetrating beam of golden yellow light. Golden Glow Headlights are particularly popular because of the absence of blinding or dazzling rays, yet they cut through fog, dust, smoke or mist with powerful illuminating effect, which lights the pathway and enhances the safety of night operation.

Made in various types and sizes to meet all railway car and motor bus requirements.
Read descriptions in your *ESSCO* Catalog No. 7.

ELECTRIC SERVICE SUPPLIES Co.

PHILADELPHIA
17th and Cambria Sts.
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50 Church St.
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318 N. Washington Ave.

CHICAGO
Monadnock Bldg.
BOSTON
88 Broad St.

Lyman Tube & Supply Co., Ltd., Montreal, Toronto, Vancouver





As the heart functions—

—to pump life blood through the human organism, so the compressor acts as a correspondingly vital element of the air brake system in providing “fluid” for actuating the brake.

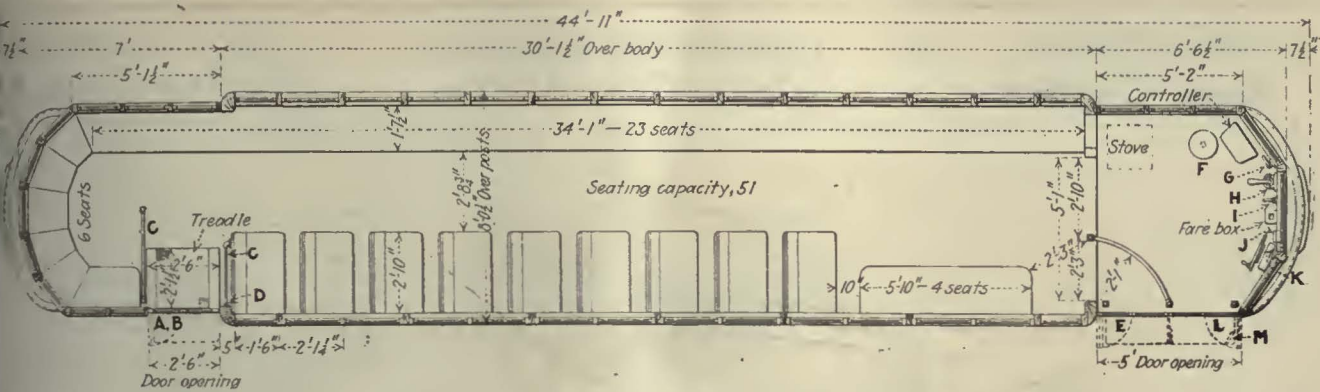
Westinghouse Air Compressors are built to meet the severe demands of street railway service. No “organic” defect is in their make-up, and only a reasonable amount of care and attention is needed to avert “functional” trouble. If maintained in a normal state of health they will need no “doctoring,” and a long life of usefulness and efficient service is assured.



Westinghouse Traction Brake Co.
General Offices and Works:
Wilmerding, Pa.

The “Bungalow” Compressor, built in sizes suitable for all classes of traction service, has proved to be a favorite because of its compact design, light weight, extreme accessibility, and dependable performance. Other types and sizes of Westinghouse Air Compressors have given a correspondingly high degree of satisfaction

WESTINGHOUSE TRACTION BRAKES

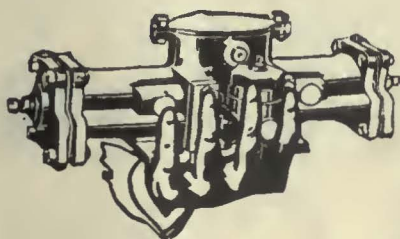


Toronto's Remodeled Cars have AUTOMATIC EXIT DOORS

LIKE Chicago, Ill., and Washington, D. C., and Dallas, Tex., Toronto has taken up the automatic door in earnest. Toronto is converting sixty cars to automatic door exit as shown above.

The Automatic Door speeds up passenger interchange without attention from the car operator. It is absolutely safe through interlocking with car control and brakes.

It's NATIONAL PNEUMATIC EQUIPMENT



National Pneumatic Co., Inc.

Originators and Manufacturers

Executive Office: 50 Church Street, New York

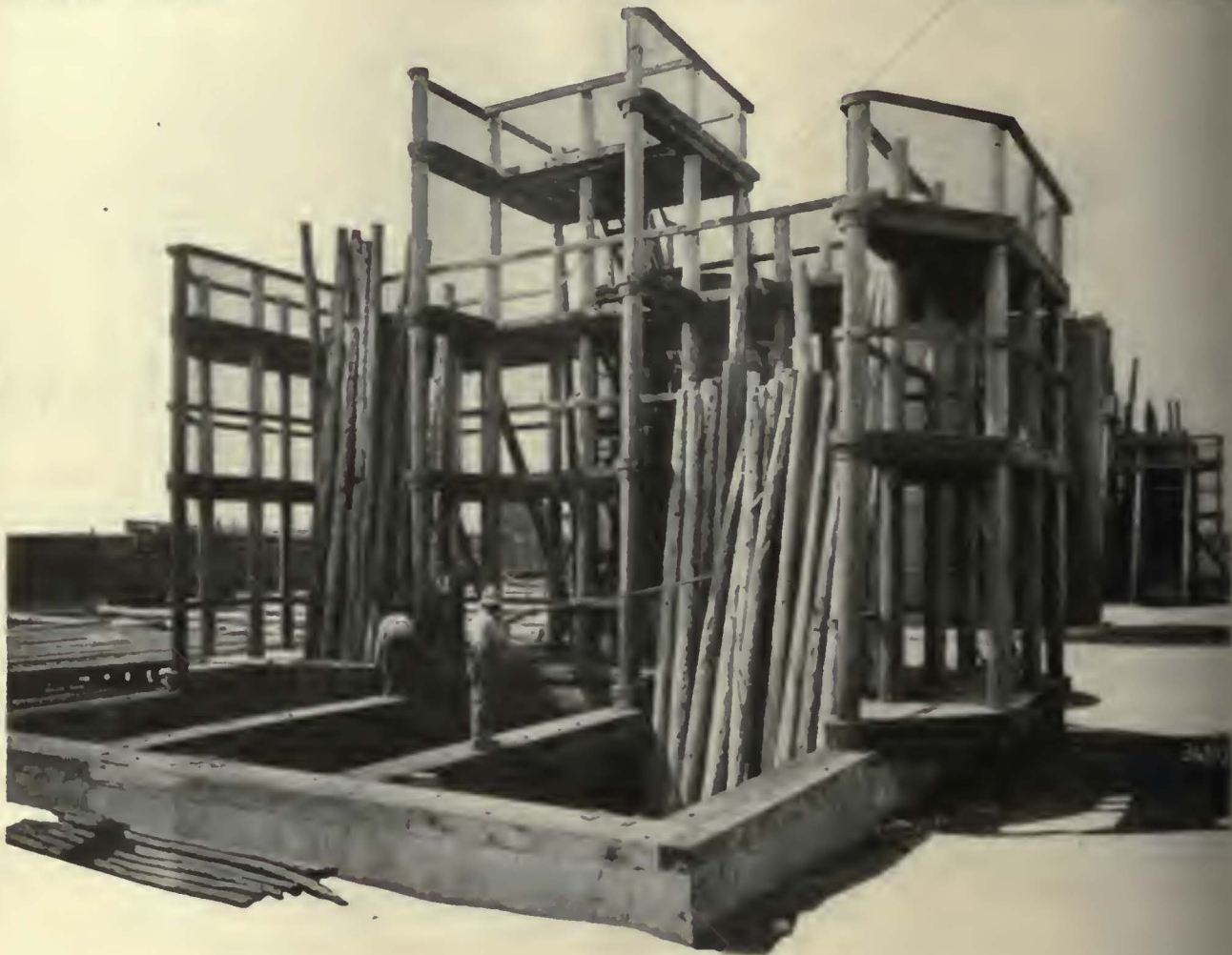
Philadelphia—1010 Colonial Trust Building Chicago—940 McCormick Building
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Manufactured in Canada by Dominion Wheel & Foundry Co., Ltd., Toronto, Ont.

**Western
Red Cedar**

**Light, Durable and Strong
Plain or Treated Poles**

**Northern
White Cedar**



NPCO

This stamp on the butt of every pole identifies and guarantees it as National Pole Quality.

Veritable Fountains of Youth

In every field of endeavor from time immemorial, men have sought the secret of prolonging life—their own and the products of their hands.

In the great vats of the National Pole Company there is a fountain of youth for Cedar Poles, the result of long continued research on the part of the Department of Research and Preservation of the National Pole Company. These men have achieved success. They have added many, many years to the service life of cedar poles and the National Pole stands today years beyond the life that it ever stood before. It stands as a monument to their work.

NATIONAL POLE COMPANY

Escanaba, Michigan

Distributors:

Western Electric Company

Operating electric railway cars has taught you—



1. *The Value of Seating Capacity!*

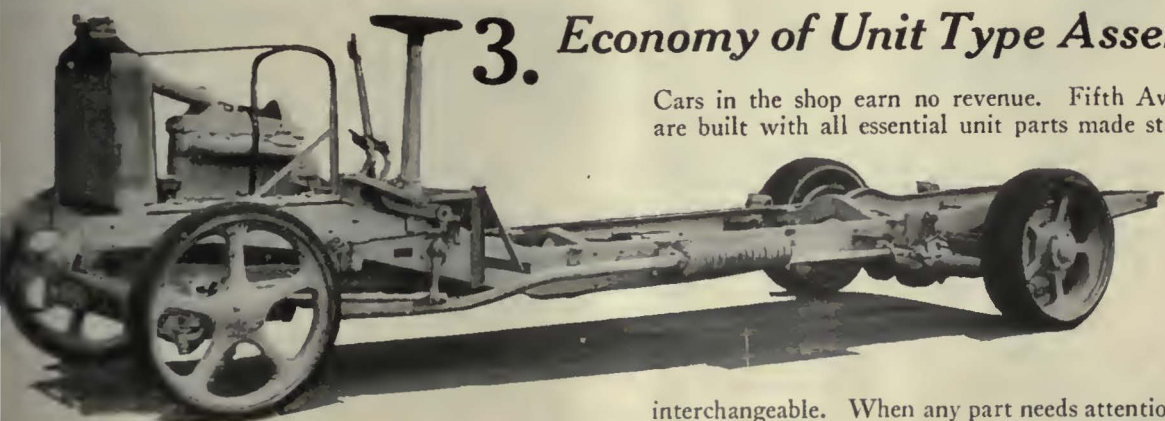
The single truck safety car of 1917 was a valuable experiment, but it soon developed into the bigger double-truck one-man car, seating 44 to 48 passengers.

In motor bus operation Fifth Avenue Double Deckers are the answer to the capacity question. Our Type L Bus seats 55 passengers, in a short vehicle occupying only 3.4 sq.ft. of street area per seated passenger.



2. *Popularity of the Open Air Car Ride!*

Remember how the public used to patronize the old cross-bench open car. You had to abandon it because it didn't pay to keep double equipment. Today, Fifth Avenue double-deckers are re-establishing the popularity of the open air ride, and the same buses, with the adjustable all-weather top, operate to full seating capacity in the coldest weather.



3. *Economy of Unit Type Assembly!*

Cars in the shop earn no revenue. Fifth Avenue Buses are built with all essential unit parts made standard and

Apply these lessons to the bus problem!

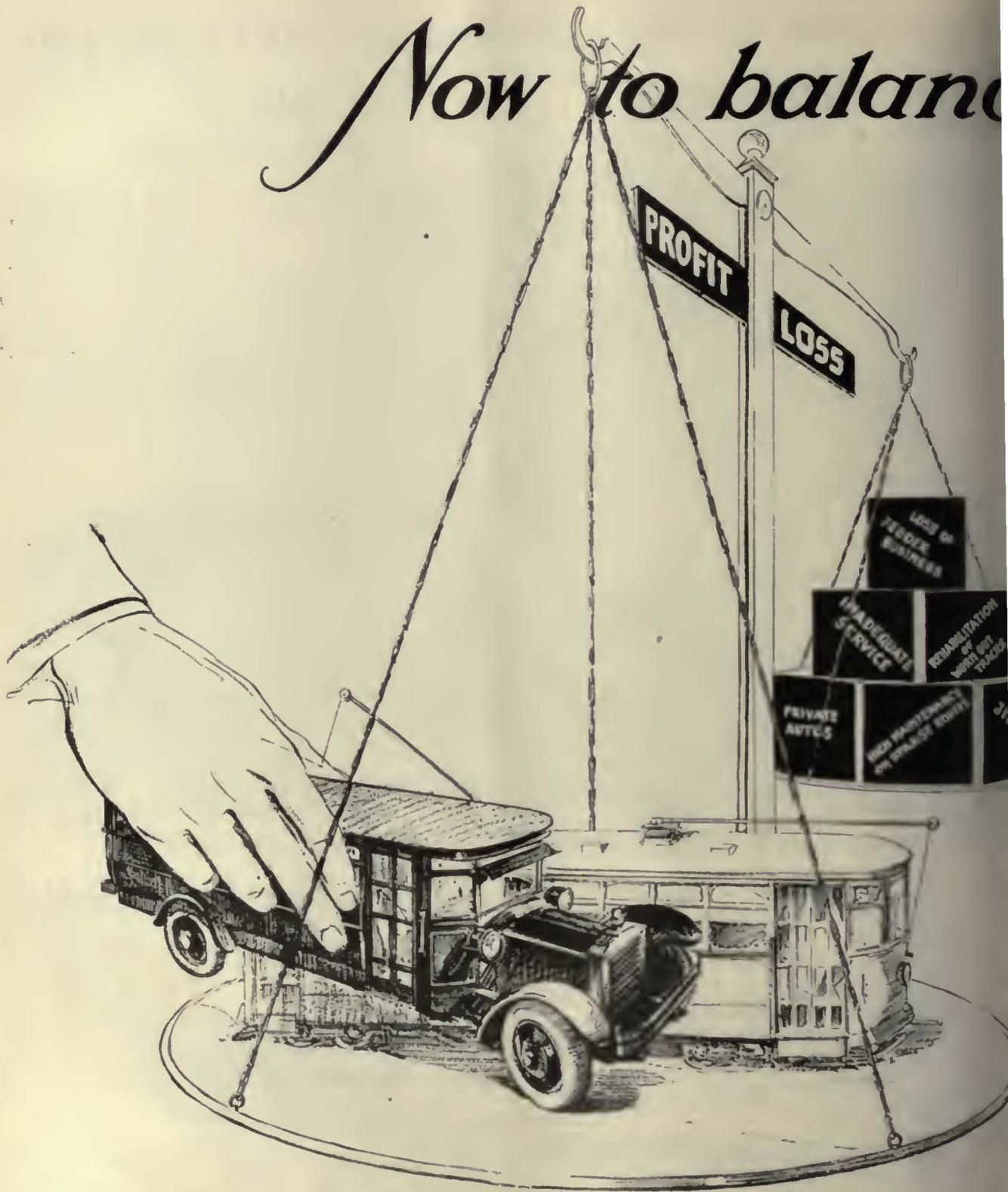
When choosing the best type and make of motor bus to meet your requirements, bear in mind that Fifth Avenue Buses are built by an organization which has been meeting successfully these same transportation, operating and maintenance problems for many years. Type L Fifth Avenue Buses are the logical and practical automotive carrier for the Electric Railway which is adding bus service to its existing rail system.

interchangeable. When any part needs attention or repair, the part is quickly removed, a duplicate installed and the bus is ready for the road. Engine, radiator, transmission, clutch, rear end, or other part can then be repaired at leisure.



FIFTH AVENUE BUSES

Now to balance



"The people demand the most modern in transportation as in everything else, and if local transportation is to be treated as a monopoly, then the company supplying the service must be prepared to give the people what they want."

—the opinion recently expressed by a prominent Southern Electric Railway man.

Profit scale - - -

competition,—heavy maintenance of unprofitable “sparse” routes,—costly rehabilitation of worn out track on our lines, and loss of business through general inadequate service! All figures pretty big in electric railway conferences of late.

The more electric railway men come to study these problems and appreciate their seriousness, the more they realize the value of the bus as a profitable ally.

In no way could competition better be met than with the inauguration of an efficient, dependable Mack Bus service, co-ordinated with regular car lines.

And how better eliminate the costly maintenance factor on “sparse” routes than by filling the tracks and substituting low-cost high-profit Mack Buses?

Then again on worn out spur lines, and as a feeder service in newly developed districts beyond existing terminals, Mack Buses make operation profitable by eliminating the disproportionate expense of installing new track and overhead.

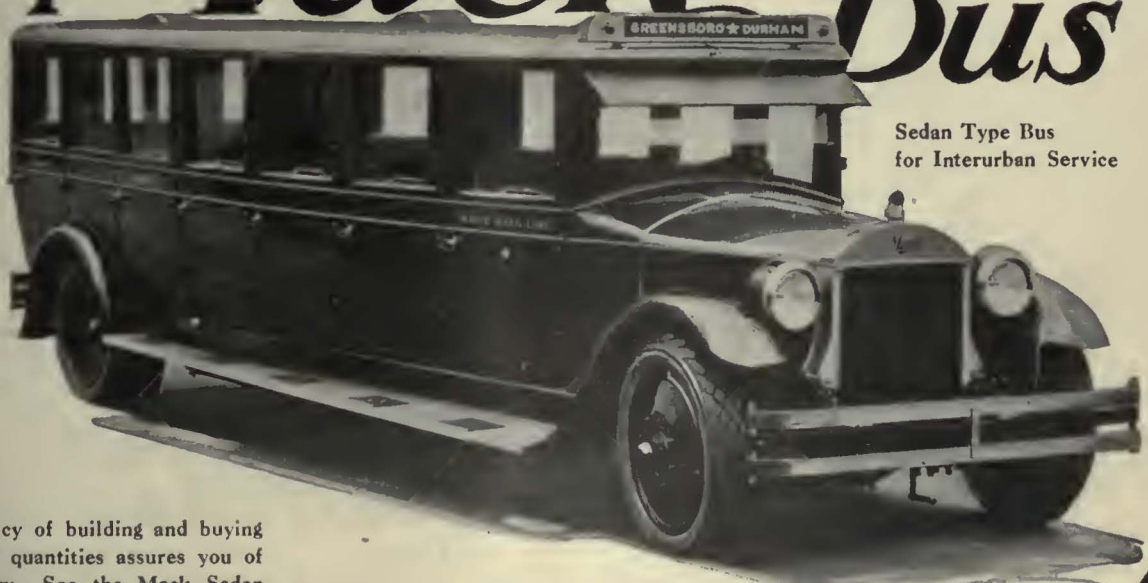
Mack design and construction result in a passenger vehicle that is all bus from bumper to tail light, bringing operating cost down to a point where electric railways can realize a substantial profit. Mack exclusive mechanical features make dependability in daily operation more than a mere ideal.

MACK TRUCKS, INC.

INTERNATIONAL MOTOR COMPANY
25 Broadway New York City

Eighty-three direct MACK factory branches operate under the titles of: “MACK MOTOR TRUCK COMPANY” AND “MACK INTERNATIONAL MOTOR TRUCK CORPORATION”

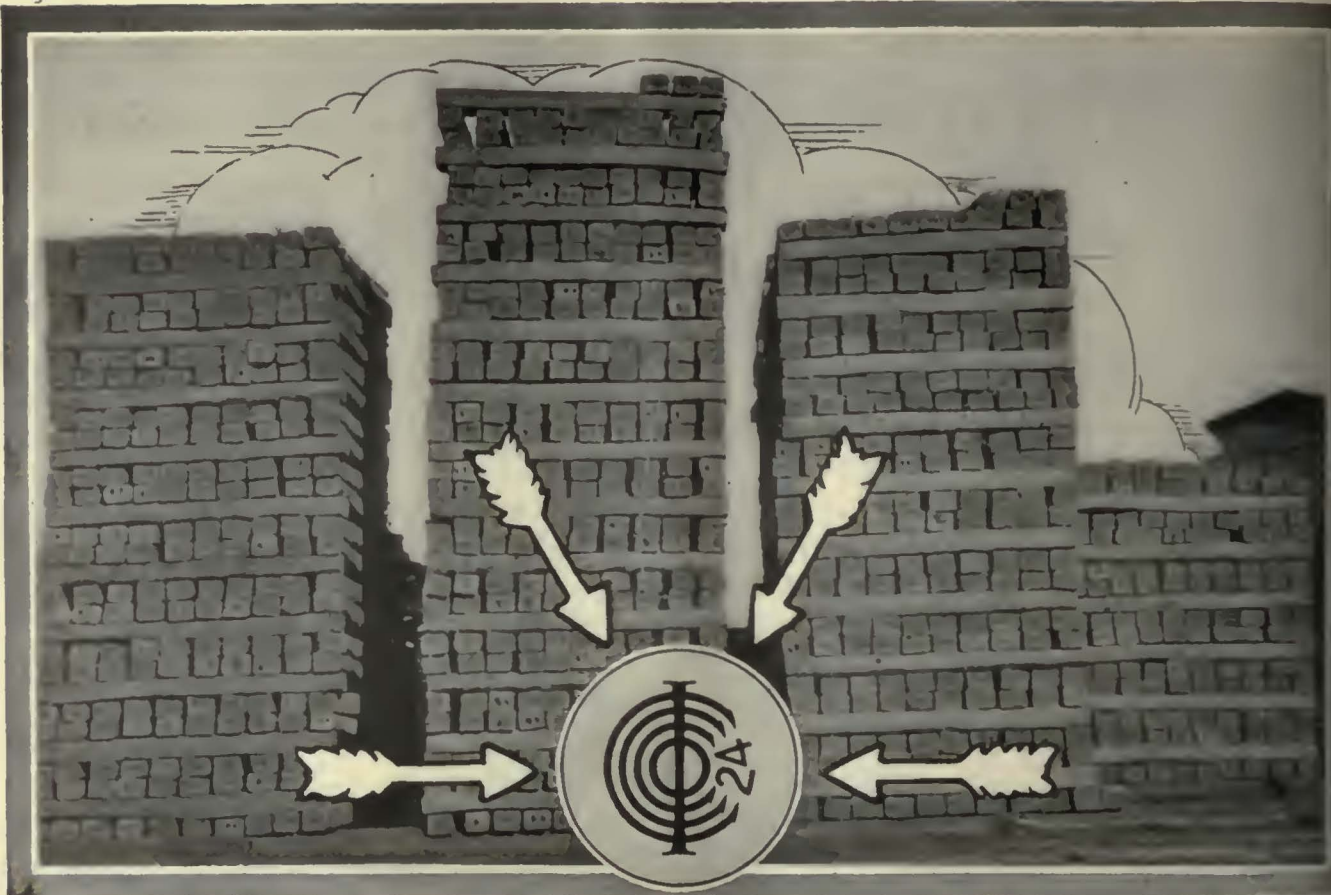
The Mack Bus



Sedan Type Bus
for Interurban Service

The Mack policy of building and buying in large quantities assures you of prompt delivery. See the Mack Sedan in the showroom floor nearest to you.

Performance counts!



Note the uniformity of these Grade 2 and 3 ties and how carefully they are stacked high from the ground on creosoted poles.

Genuine Assurance of Tie Quality

THE railroad that is burdened with the expense of decayed, over-graded, or inferior ties should try *International Tie Service*. This service eliminates the uncertainty of tie buying, for *International Tie Service* is confined to the sale and delivery of sound, full size, Standard Specification Ties, marked with the *International* dating nail—the 18 Karat Mark of Tie Quality placed in every tie.

This dating nail not only insures protection to your investment at the time of initial purchase of ties, but results in a saving in track maintenance due to longer tie life and fewer tie renewals, either of which is big enough and positive enough to command your thorough investigation.

Contract with International now—the future will thus be assured.

International Creosoting & Construction Co.

General Office—Galveston, Texas

Plants: Texarkana, Texas, Beaumont, Texas, Galveston, Texas

International

Standard Specification Ties

Bay State Completely Equipped

In 1918 the Bay State System, now the Eastern Massachusetts Street Railway, installed 1239 ECONOMY Meters. This road has since purchased additional ECONOMY Meters for all new equipment.

The power saving induced by this large installation paid for the meters during the first year. In addition, the meters proved to the Company the high value of car inspection on a kilowatt-hour basis.

As a result, the Bay State System, in 1921, contracted for inspection dials for the meters on 700 active cars, which include 251 new Safety cars.

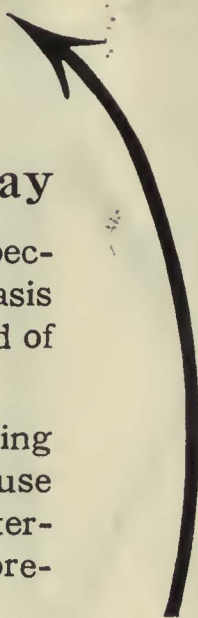
Thus the Bay State System operates an ECONOMY Meter on every one of its regular cars and *inspects every car on the kilowatt-hour basis.*

Mr. W. C. Bolt, Supt. of Rolling Stock and Shops, in a paper delivered before the New England Street Railway Club, Oct. 30, 1924, commenting on the value of the inspection dials, said: "I might state right here that early in 1921 it was decided to place our car maintenance on a systematic basis, and to accomplish this, power meters were installed on each active car equipped with so-called 'inspection dials'. These 'inspection dials' automatically indicate when a car has operated approximately 1,000 miles, at which time it is given a car house inspection, and again when the car has operated 60,000 or 75,000 car-miles, at which time it is given a general shop overhaul.

These power meters have materially assisted us in determining promptly and at a minimum cost when individual cars become due for attention."

"The accepted standard of maintenance which prevailed five or ten years ago cannot prevail today"

—W. C. BOLT



The Accepted Standard Today

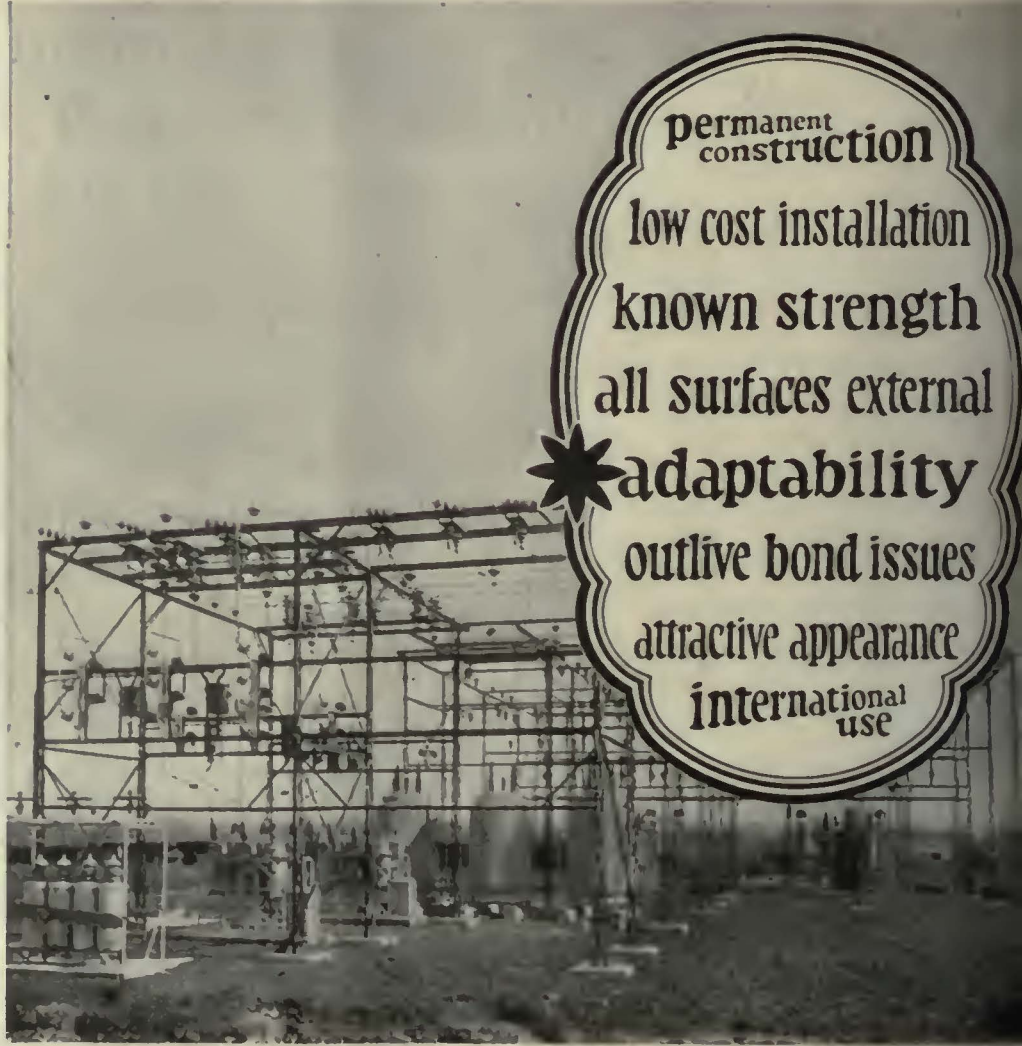
Many properties regard the car inspection dials on *Economy Meters* as the basis for a systematic and scientific method of car maintenance.

With Economy Meters they are saving power at the car, labor at the car house and are providing efficient and uninterrupted service to the public. Let us prepare an estimate for your property.

Economy Electric Devices Co.
Old Colony Bldg., Chicago

ECONOMY METERS

with car inspection dials....



permanent
 construction
 low cost installation
 known strength
 all surfaces external
 ★ adaptability
 outlive bond issues
 attractive appearance
 international
 use

ADAPTABILITY

★ The wide adaptability of Bates poles makes them applicable for every pole purpose.

They readily and economically adapt themselves to fabrication into combination poles, towers, A frames and H frames—and for substation construction. As trolley supports, for signal tower use, as transformer rack frames, and as street light standards—they are used to advantage.

Get a Bates quotation for consideration and comparison!

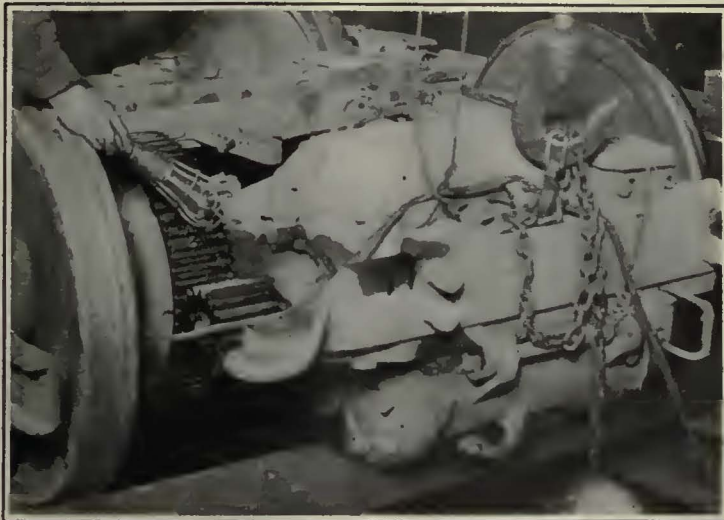
B E S T
 Bates Expanded Steel Truss Co.

Illinois Merchants Bank Bldg.

Chicago, Ill., U. S. A.

BATES ONE PIECE
EXPANDED
STEEL POLES

Galena Oils and Service



A saving worth while

Gear lubrication presents a striking example of the effect of friction on power consumption—the friction of resistance offered by the body of the lubricants used.

Galena Gear Grease is a product made specially for the particular function of gear lubrication. It has a light, even, oily body that cushions and protects the gear teeth without retarding their continuous meshing action.

The introduction and use of "tacky," or sticky grease for this purpose invited comparison of the service efficiency of Galena and the other products. Tests were conducted by recognized engineering authorities to determine the relative coefficient of friction.

At the rate of one cent per K.W.H.—a most conservative estimate of power cost—the lower coefficient of Galena Gear Grease represented a saving in annual power cost of \$21.24 for a two-motor car, or \$42.48 for a four-motor car. This on a basis of eight hours per day service.

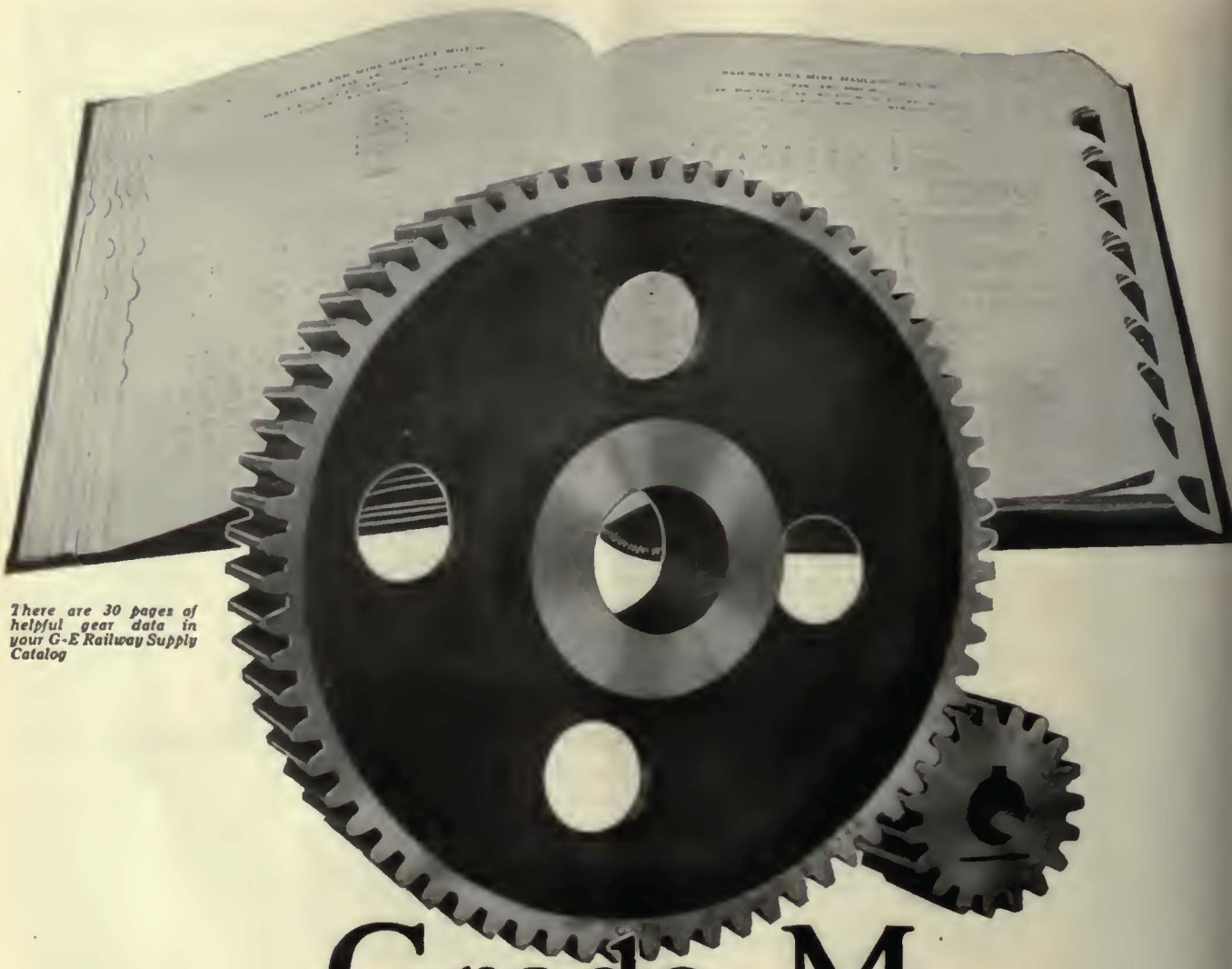
Multiplied by the number of cars that a road operates, the total value of the excess power consumed annually if unsuitable lubricants are used for this service may be easily estimated and the economic value of Galena Gear Grease appreciated.

Galena-Signal Oil Company

New York Franklin, Pa. Chicago

and offices in principal cities





There are 30 pages of helpful gear data in your G-E Railway Supply Catalog

Grade M

IMPROVED methods recently adopted in the manufacture of General Electric Gearing are sure to be felt in mileage records of the future. They give promise of mileage even surpassing that long associated with Grade M.



The production of successful railway gearing is an art dependent on research in metallurgy, special skill in manufacture and rigid inspection and tests. G-E Railway Gearing is favored by research facilities that are unsurpassed.

General Electric Company
Schenectady, N. Y.
Sales Offices in all Large Cities

G-E metallurgists and engineers are constantly investigating processes and materials, that the supremacy of G-E Gearing may be maintained.

Let G-E railway gear specialists tell you of these recent improvements.



GENERAL ELECTRIC

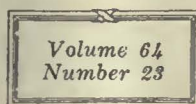
New York, Saturday, December 6, 1924

Electric Railway Journal

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

Published by McGraw-Hill Company, Inc.

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



A Background of Forty Years for Future Building

By HARRY L. BROWN
Editor Electric Railway Journal

FORTY years ago last month—in November, 1884—the first issue of the magazine that has since become the ELECTRIC RAILWAY JOURNAL made its debut to the youthful but vigorous street railway industry. Then, as ever since, the paper was presenting information on those subjects and problems in which there was most interest on the part of the men responsible for what was destined to become a great public utility. Those were the days when the street railway was not a necessity but a convenience, and the managers had to offer inducements to get the people to ride. Street transportation was then as live a topic as it is today. It came to be once more in recent years. Aside from the more general aspects of the street railway business, the early issues of the JOURNAL treated its technical details, and these at the time had largely to do with harness, colic cures, feed cutters, grooming machines and the like.

Even at this early date, however, improved methods of operation had a prominent place in the paper. The electric drive was then rapidly coming to the front to replace the horse and more economical service. Electricity as a motive power was frequently touched upon. While at the beginning of the paper electricity was looked on merely as an experiment, it was soon visualized by the editors as the future means of propulsion for all street railways, and the paper became its active champion. The general opinion at the time, however, was in favor of cable.

Thus the whole story of the industry, its struggles and successes, its mechanical development, its financial and accounting difficulties, its relations with public authorities, its progress in solving these many problems, little and big—all have been recorded for the benefit of the field in the pages of this paper. It has mattered that hay motors gave way to electric motors, that rope traces gave way to gears, feed cutters to rotary converters and colic cures to shop equipment; the JOURNAL has kept pace. Indeed it has been a significant factor in leading the way. Through these 40 years of transition and of enormous growth in the business of urban and interurban transportation, it has proceeded continuously in the interests of the industry. Through most discouraging days it has stuck by the industry and steadfastly maintained that a utility so essential could not perish. It has suffered financially

with the reverses in the industry, for it prospers or declines with the industry. Which is to say that the JOURNAL is part and parcel of the industry, its champion, its critic when criticism is helpful, and above all, its informant—the “bible of the industry,” as is often said.

With this number, the JOURNAL commemorates its fortieth anniversary. Its history, in bare outline, is published in the following pages. Interesting as this is, it does poor justice to the history that is disclosed by going back through the 64 volumes that compose its record. To one who is intensely interested in the industry today, here is a pastime of genuine pleasure.

Going back to the very first issue, whose front cover masthead is reproduced on the second succeeding page, it is interesting to note that six pages of the total of 24, including advertisements, were devoted to news of the American Street Railway Association which had recently been organized. Thus the JOURNAL has always been an enthusiastic supporter of association activities.

From the start, the paper has featured progress and new methods—modernization. For progress is essential in an industry that not only is a direct impetus to great growth in the population of cities, but which must itself keep pace with the increasing demands upon it due to this very growth.

Think what it would mean, for example, if present-day traffic had to be handled by horse cars. The industry would have to possess more than 1,000,000 horses and mules. The Chicago Surface Lines alone would have to have some 40,000 animals. Picture the stables for housing such a herd, the small army of hostlers to take care of them, and the scores of “white wings” required on the streets. Then you take a keener interest in the discussions of the “Refined Habits of the Louisville Street Railway Mule” that found space in some of the early issues.

It is also interesting to find that the JOURNAL has treated the street railway as an essential part of a city from the very first. We find this comment in an editorial in the issue of May, 1885:

Without this cheap and convenient system of internal transportation, working within and in co-operation with the other greater or lesser divisions of labor, the modern city could not exist. Cities of a million population now are few in number and those several cities in the near future with five million population would never exist except in the imagination of sanguine and false prophets,

but which by the aid of street transportation will be facts to be learned from the geography of our children.

The JOURNAL was even then building for the future. It started out with a clear vision of the great function of transportation. That vision has been realized over and over, but it has constantly expanded. Now, with the new, flexible, mobile bus as an added tool, the vision of the transportation industry of the future is again as much beyond its present scope as is the present industry beyond the horse car stage of 40 years ago.

More than of any other individual, this vision of the JOURNAL has been the reflection of the vision and genius of its publisher, James H. McGraw—a great builder of industry. The JOURNAL was his “baby”—his first publication and the beginning of the group which now are produced by the largest industrial and business paper publishing house in the world, of which he is the head. To him, clearly, is industry indebted for having set a new and substantially higher standard of editorial service in such papers. He has never spared expense nor effort to make the JOURNAL, nor any of the other McGraw-Hill publications, of the utmost possible usefulness to their industries. He sees them as among the tools of industry and as such they must be sharp and true and made of the right metal. As he said to the writer, “My whole book of instructions for you is this: ‘You cannot make the paper too good to suit me.’”

It is that opportunity without limit to serve the electric railway industry to which the JOURNAL is now, even more than ever before, striving to measure up. It has a background and experience of 40 years to guide its future building. Its purpose will always be to merit the high place it holds in the estimation of the industry.

Prosperity and the Electric Railway

FOUR weeks of a bull market in Wall Street indicate the general impression of prosperous times ahead. President Coolidge in his speech in Chicago on Thursday of this week expressed the same thought, though with a word of caution that prosperity will come only if we work for it. Secretary Mellon makes the same prediction in his annual report, published yesterday, in which he said: “The situation in America looks more favorable for sound and orderly economic development than at any time since the war.”

Undoubtedly the electric railway industry should prosper in times of general good business. With general industry active, employees must be carried back and forth to their places of work, and they will have more money to spend for other travel for themselves and their families. Their purchases will be greater, and those railways hauling freight should enjoy more business. As a necessary utility for all classes of people, the gross revenue of the electric railways of the country should increase with prosperous times. At the same time railways may expect an increase in their unit costs, though the inflation of the post-war period is not to be expected, as business conditions, both in this country and abroad, are on a much sounder basis than in 1920.

Of course, the railway industry is very much better fitted to meet any increase in costs than it was in 1914 and 1915. The essential nature of the service which it renders is generally recognized, its equipment

for rendering this service is of better design and in much better condition than 10 years ago, and the demand for higher fares with increased expenses is generally recognized. A slight increase in the cost of operation, if it comes, need not be a cause, by and by, for worry. But during the period now coming electric railways should watch carefully their expenses as well as their receipts, and if the former with careful management rise unduly they should lose no time in devising some system of fares which will increase the margin of profit.

Modernization Builds Morale

MATERIAL improvement in the morale of the operating and maintenance employees is a certain product of real modernization work on an electric railway. Its importance is perhaps as great as the direct results for which modernization is undertaken, namely, economies, better patronage and better public relations. This is just beginning to be realized, and the properties which now have their modernization programs well along.

The modernization work on the Eastern Massachusetts Street Railway system, resulting in far better operation at lower maintenance costs, was told about in this paper, page 808, Nov. 8, and discussed editorially on page 830 in the issue for Nov. 15. On this property the management has noticed a most desirable change in the attitude of the employees. Because new equipment has replaced a large part of the old and worn equipment put in good condition, the maintenance men think now, when a car comes in, that it is worth repairing. They have some respect for it. Also, when a motorman takes a car out, he does so with the feeling that it is a good piece of equipment, not a despised “pile of junk.” He has assurance that it is going to run all day and not have to be pulled in after a few hours.

It is easy to comprehend what such a feeling of confidence in and respect for the equipment, spread over the property, means in the way of improved service, better public relations, more revenue and less expense.

An interesting reflection of the poor morale which results from the opposite situation on a railway was observed the other day. This was on a property where one is almost afraid to ride on the cars for fear they will fall down on his head and where there has never been a new car or a new piece of equipment since the time whereof the memory of the present generation of employees runneth not to the contrary.

A conductor came up to the front end for a word with the motorman while the car awaited the traffic signal. He said to his teammate:

“How’s she acting now?” The car had evidently been pulled in that morning and was now on its first run out of the carhouse again. The motorman replied:

“She’s pretty good now. They put a new tip in the controller.”

“I’m glad to see *something* new around here,” said the conductor.

That remark told volumes about the condition of property and the indifferent morale of the men. It is virtually impossible to have good morale, a matter of profound importance, on a system that has for many years not had a new car nor any evidence of keeping up to date.

THE STREET RAILWAY JOURNAL



VOL. I. { NEW YORK: }
{ 32 Liberty Street. }

NOVEMBER, 1884.

{ CHICAGO: } No. 1.
{ 8 Lakeside Building. }

William B. Lewis.

fitted him to fulfill all the exactions of the position, in which he made an enviable

Bank Department, in those years of much greater importance than at present, hence

Street railway interests

Forty Years of "Electric Railway Journal"

Historical Sketch of the Beginning, Development Policies and Service Rendered by a Publication Which for Forty Years Has Been the Principal Medium for Disseminating News and Technical Information of the Street and Interurban Railways—It Has Striven to Be of Major Service to the Industry Through the Transition from Horse Car and Cable to Electric Car and Recently to Include the Bus



WITH the issues of November this paper, formerly the STREET RAILWAY JOURNAL, completed 40 years of publication service to the street railway industry. It was the first paper in this world. The industry then was already of sufficient magnitude that the need was felt by the men in the field for a medium in which to exchange information and keep them abreast to date on the inventions and experiments which were the forerunners of important developments soon to come in the street railway industry. There were then some 525 horse railway companies in 300 cities in the United States. Their equipment comprised 16,000 four-wheel cars and 100,000 horses and mules. In addition there were cable railways in six cities—San Francisco, Chicago, Cincinnati, Kansas City, New York and Philadelphia. Although the cable had been introduced in 1873 in San Francisco, primarily to provide service on the steep hills, its further use had made slow headway. This was principally on account of the excessive cost of installation as compared with the simple track required for a horse railway. Electric propulsion of cars at this time was hardly more than a dream. The idea had been conceived several years before. A number of purely experimental and exhibition lines had been built in the

period dating from 1879. The electric propulsion of cars necessarily awaited, however, on the development of electric generating machinery and of railway motors and control. In fact, looking back now, it seems fair to say that in large measure it was the electrical manufacturers who made possible the great local transportation industry of today.

The first electric street car line to be operated in regular service, that installed in Cleveland by Bentley and Knight, was 2 miles long and had three cars operating on a crude underground conduit. It made its appearance about the time of the STREET RAILWAY JOURNAL, going into

service in July, 1884. Thus the JOURNAL may be said to have been born with the electric railway. The installation at Richmond, Va., by Sprague, which is usually referred to as the first practical electric road, did not come along until four years afterward. It, of course, was by far the largest installation up to that time, and more than any other proved the practicability of electricity for car propulsion. The discussions of electric operation in the early issues of the JOURNAL were thus based on the experimental installations.

The founding of the paper was also nearly contemporaneous with that of the American Street Railway Association, and in one of the early issues gave a report of the second annual convention of that association.

This, in a few words, was the extent and nature of the industry when the JOURNAL was started in November, 1884. The first conception of the paper had been the idea of Emerson P. Harris of Chautauqua County, N. Y. He had lifted a street railway department out of the *Journal of Railway Appliances*, a steam railway paper, to create the STREET RAILWAY JOURNAL as a separate monthly publication. This new paper during the first 4½ years was edited by Robert Grimshaw, George L. Fowler and Mr. Harris. It dealt mostly with horses and allied topics and the early transportation prob-

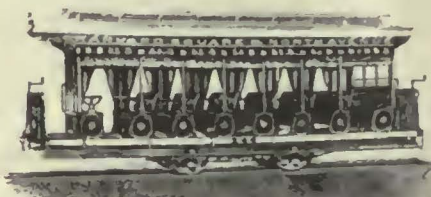
NOVEMBER, 1884. THE STREET RAILWAY JOURNAL 15

J. C. BRILL & CO., PHILADELPHIA.

Holders of


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TRAMWAY
CARS

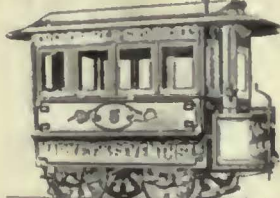
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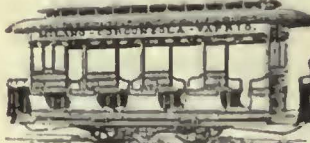


The Construction of which we have brought to a high degree of Excellence

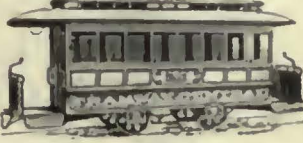







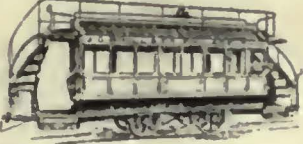


GOLD MEDAL
BEST
Tram Car.





Chicago Exposition of Railway Appliances, 1883.



CABLE ADDRESS—BRILL—PHILADELPHIA.

An Advertisement Which Appeared in the First Issue of the "Street Railway Journal" in November, 1884. The Brill Company is the Only Advertiser of that First Issue that Remains in the Field Today and It Has Been Represented in Practically Every Issue Since that Time.

lems, with some articles and discussion on cable installations and electrical experiments.

James H. McGraw, another young man from Chautauqua County, had come with the American Railway Publishing Company, which was the publisher of the *Journal of Railway Appliances, Power* and the *STREET RAILWAY JOURNAL*, early in 1885. In 1889 he purchased the *STREET RAILWAY JOURNAL* and started his own company. Mr. McGraw then became editor and manager as well as publisher. This was about the time of the real beginning of electric operation of street railways. While with the American Railway Publishing Company Mr. McGraw had been everywhere that

anything new of importance was going on in the industry. He had seen the great value of this intimate first hand contact and observation. So with the *STREET RAILWAY JOURNAL* as his own, he began editing the paper from the field. This has been the fixed policy of Mr. McGraw ever since all of his present great group of industrial publications.

Besides his personal editorial work Mr. McGraw developed an organization and got enough business in the paper to carry the expense and make possible this extensive traveling and field editing. C. B. Fairchild, Edward E. Higgins and Henry W. Blake were the editors whose labors contributed early toward giving the paper a standing in the field.

The *JOURNAL* was newsy and readable and in great demand. It was edited with self-assurance. There was a captivating spontaneity about it and an atmosphere of intimacy with the reader. The service rendered to the American Street Railway Association was invaluable. This consisted in printing notices and full and prompt reports of meetings. The names of association officers appeared in a masthead in every issue.

The first issue contained more than six pages of convention reports. Of its 24 pages, four were occupied with editorials, personals, letters and fillers. Nearly 13 pages of advertising completed the contents. The first page was occupied with an obituary notice, illustrated with a wood cut of William B. Lewis, who had been president of the Brooklyn City Railroad, which incidentally has the same corporate identity today as then.

In these early issues the name of C. J. Van Depoele was much in evidence, as his company was very active at the time in making installations of electric railways. John Stephenson, the veteran car builder, wrote on the evolution of the street car in which he had played an important part. Bentley and Knight, whose names are linked with pioneer electric railway work, figured prominently. The opportunity to reach the street railway field through the widely circulated paper was appreciated by Sidney H. Short, Frank J. Sprague, Elihu Thomson, E. J. Houston, J. C. Henry and many others. These men were prolific of ideas regarding the electric motor and its application. Their comments and the articles regarding their inventions made reading of intense interest to street railway men.

Mr. Fairchild, upon becoming editor of the paper, began visiting street railway properties, spending enough time on each really to become acquainted with its problems and its equipment. His researches were promptly reflected in the paper which showed clearly that it was being edited from the field.

One of his first ventures was a series of talks with electric railway men, in which he used the dialogic form of reporting. He began in July, 1889, with C. D. Wyman, vice president Central Park, North East River Railroad. The "talks" made a big hit and were continued for some time. Mr. Fairchild wrote

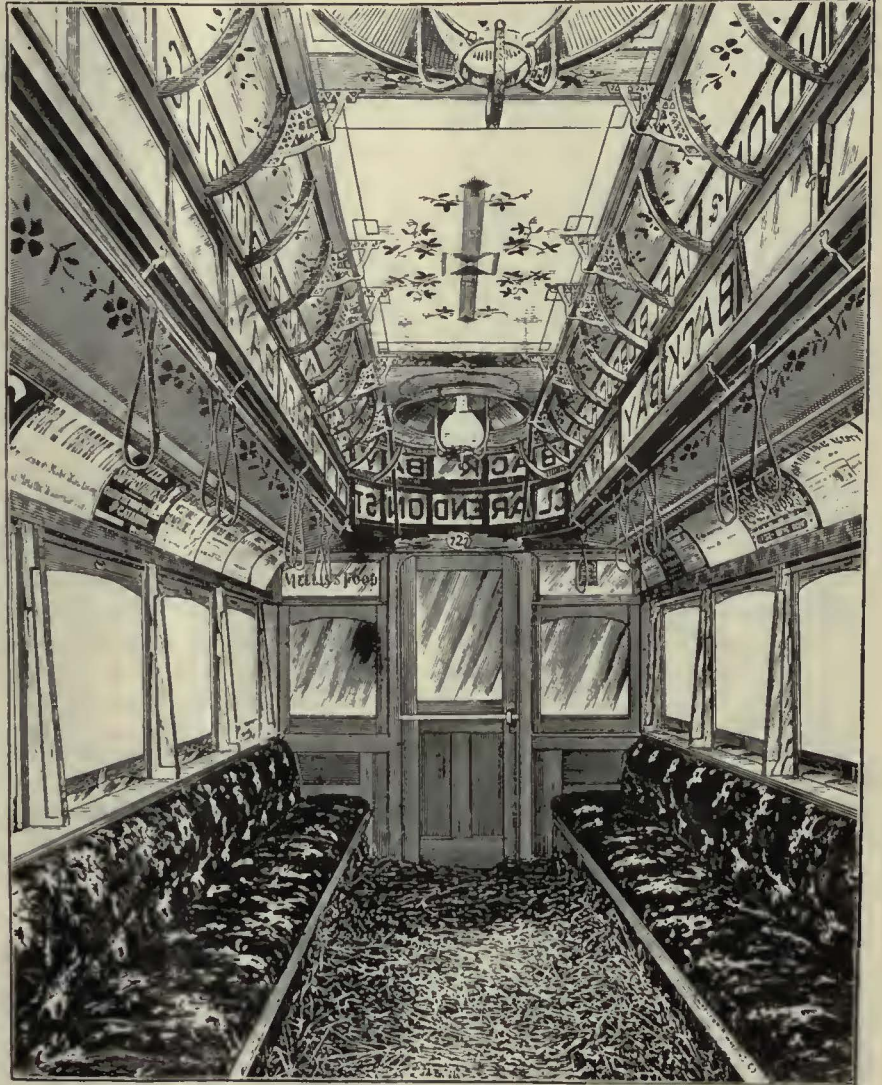
from the field fully illustrated descriptions of electric railway conditions in many important cities. These studies were unique and their thoroughness commended them. They were voluminous but easy to read and were of great service to the industry. During 1893 and 1894 all but four states in the country were visited and their railways studied in detail.

Mr. Fairchild had not been traveling long among street railway properties before he discovered a need for some kind of a systematic text-book in this field. The scattered railways needed a foundation of information as to best practice if they were to progress without making costly mistakes. He undertook to furnish it. He began in the *JOURNAL* in 1890 a series of copyrighted articles on street railway practice, later published in book form with the title: "Street Railways; Their Construction, Operation and Maintenance." As one of the earliest books on practical electric railway construction and operation, this proved to be a splendid piece of work which was widely read and highly appreciated by the industry.

Mr. Fairchild's principal contribution to the paper during his 6-year connection with it was that he brought it into personal contact with the leaders of the industry. These 6 years comprised the period of most rapid electrification of the horse, steam and cable street railways. He watched this process not at long range from the office, but on the ground. Although not a railway man by training he was able to sense the problems that confronted the men who were doing pioneer work in transportation.

It was in 1891 that the first "Souvenir" issue of the *JOURNAL* appeared. This was a supplement to the paper, issued in advance of the A.S.R.A. convention. Its purpose was to prepare the way for the convention.

As to editorial contents, the main feature of the "Souvenir" was a group of articles regarding the convention locality, each of the many railways in Pittsburgh and Allegheny being covered. This practice has since been followed in what later were designated as "Convention Issues" rather than "Souvenirs," whenever the convention has been held elsewhere than at a pleasure resort. There was also a history covering the 9 years of the association, articles regarding leading



An Elaborate Wood Cut from the Cover of the *Street Railway Journal* of June, 1886. It Shows the Interior of a New Car of the Metropolitan Railroad, Boston. The Cut Was Used in Subsequent Issues in an Advertisement of the United States Steam and Street Railway Advertising Company, Ltd.

manufacturers, a list of exhibitors containing 117 names, and a membership list of the association.

MR. BLAKE JOINS THE STAFF

When Henry W. Blake came with the *JOURNAL* in January, 1891, as assistant to Mr. Fairchild, he added an element to the organization that it had not had before. He had had unusual educational advantages. He had graduated from the Sheffield Scientific School of Yale University in 1886, in civil engineering, and had followed his Yale course with one in electrical engineering at the Massa-

chusetts Institute of Technology, finishing it in 1888.

After graduation, Mr. Blake had been connected with the Sprague Electric Railway & Motor Company, for which he handled advertising and publicity. This work naturally brought him into contact with the trade press of that day, and he became acquainted with Mr. McGraw.

Mr. Blake co-operated heartily with Mr. Fairchild in the endeavor to make the paper practical. He was the natural successor of Mr. Fairchild when the latter left the paper in 1894.

Studies in Electric Railway Economics

BY 1893 the *STREET RAILWAY JOURNAL* was so firmly established and had made so creditable a record for itself that it was ambitious to render even greater service

to the industry than it had done theretofore. The opportunity developed through the appearance on the scene of Edward E. Higgins, who after some 7 years experience

with several manufacturing companies traveled extensively abroad. On returning home he opened a consulting engineering office, but soon after, in 1893, joined the staff of the JOURNAL as co-editor.

He had already begun the preparation of a series of articles on street railway investments. These were published in the JOURNAL, beginning in the January, 1894, issue. They were a notable contribution to a new subject and attracted wide attention. Later, these articles were published in book form.

While the articles were coming out, the preparation of a financial manual was also under way. It first appeared in June, 1894, as a supplement to the JOURNAL. At first it carried the title "American Street Railway Investments," but it later became the "McGraw Electric Railway Manual." The supplement was bound in cloth of a brilliant red color, from which it soon became known as the "Red Book," a nickname which continued through its 21 years of existence.

The "Red Book" contained much financial information that was not

available elsewhere, even including subdivided operating data when such were available. In the first issue there were reports of more than 1,000 railways operating in about 600 cities and towns.

The consolidations that were going on as horse car lines were bought up extended their range and made the financing less and less a matter of local concern. Large sums of money were needed and it became necessary to go to outside investors for funds. This naturally made a field for the "Red Book," which stepped in to help sell the idea of the electric railway as a desirable investment field.

Mr. Higgins continued as co-editor of the JOURNAL until 1900, when he retired to enter the general publishing field. He was with the paper during the period when his expert knowledge was most needed, that is, during the constructive, speculative period of the business.

The "Red Book" which he started was continued after he left the JOURNAL, as long as there appeared to be a field for it. It was discontinued with the volume for 1914.

railways of the United States and Canada, it also increased in prestige abroad. The practical application of electricity as a propelling power for street railways in Europe lagged somewhat behind that in this country. Although Siemens & Halske had demonstrated that electric cars were practical as early as 1879, it was not until 1894 and 1895 that really active European tramway development took place. In the meantime the phenomenal success of the electric railway in this country was creating abroad a demand for American apparatus, and large quantities were exported.

The JOURNAL had a considerable share in keeping Europe informed as to what America was doing along this line. It was natural, therefore, that the office of the paper was frequently visited by representatives or delegations from Great Britain and the Continent who had been sent here to study American practice. This brought the editors into close touch with foreign developments. Furthermore, the paper had competent foreign correspondents and early established a London office in charge of A. W. Shaw, who served as European manager until 1917.

Messrs. McGraw, Higgins and Blake had traveled extensively in Europe. They were quick to see the desirability of publishing a special European edition which would increase the already large foreign subscription list and render the advertising more fruitful. Such an edition, started in 1897, was a modification of the American edition, some parts of the latter being lifted out and a section dealing with foreign practice being inserted.

The body of the paper was all in English, but to assist the foreign subscribers quickly to gain a comprehensive idea of the contents of an issue, digests of the principal articles were printed in French, German and Spanish. The digest facilitated the use of the paper, as a person familiar with one of the foreign languages was able with its aid to determine whether it was necessary for him to dig into the original article. References to figure numbers in the articles were given in the digest, thus virtually illustrating it.

The foreign edition with the digest was continued for several years, until the increasing familiarity of the JOURNAL'S foreign readers with English rendered it no longer necessary.

Real Newspaper Service Started

AS FAR as the style of the contents went the STREET RAILWAY JOURNAL was newsy from the start. It went as far as a monthly publication could go in furnishing news, but in its first decade there was not the pressure upon it for prompt news service that came about in the middle '90s. By this period the street railway business was booming. The incorporation of new companies was of frequent occurrence, and enormous quantities of supplies were being purchased. So the JOURNAL publishers felt it incumbent upon them to provide news service of a more comprehensive nature.

The first step was the issuing of a daily business news bulletin for the benefit of advertisers and prospective advertisers. This put the facts promptly before those who could most immediately benefit from knowing them. Information for the news bulletin was secured from local correspondents, by the editors, etc. The more permanent items of news used in the bulletin were salvaged for insertion in the regular issues of the JOURNAL.

Experience with the news bulletin, and the desire of the publishers to improve the news service furnished

to all subscribers, led, in June, 1899, to the issuing of a weekly supplement, devoted entirely to news. This was continued to the end of the year, when it was incorporated with the paper as a regular feature. With the issue of Jan. 6, 1900, the STREET RAILWAY JOURNAL became a regular weekly.



Another Type of Motive Power Advertised in the Issue of January, 1888

During the first month the first issue of the paper contained 66 text pages and the others 12 each, but gradually the news issues increased in size and finally all issues became uniform. The news section, however, was printed in a definite place in the paper, thus continuing in a way the identity of the news issue.

SPECIAL ATTENTION GIVEN TO FOREIGN PRACTICE

While during its first decade the STREET RAILWAY JOURNAL was growing in influence among the street

Journal Becomes More Technical

THAT the STREET RAILWAY JOURNAL was keeping in close contact with its rapidly developing industry was indicated by the increasingly technical, although always practical, nature of many of its articles. From 1895 onward, for, say, 15 years, the progress of electric railways was mainly along engineering lines. Power plants and power transmission, track design and construction, scientific application of motors, and heavy electric traction were features of transportation work which had attracted engineers. The JOURNAL became largely an engineering paper for a time.

An excellent illustration of the work of the paper along engineering lines is furnished by the campaign on train-resistance formulas. Obviously it was essential to designers to know what resistance a car or train would have to overcome at various speeds.

The JOURNAL started with a formula determined by John Lundie, a consulting engineer who had had much to do with the elevated railways in Chicago. The Lundie formula soon became famous through the publicity thus given to it. Experts like C. O. Mailloux, W. H. Blood, Jr., and others brought out the results of their work through the JOURNAL almost as a matter of course. Within 10 years its columns became the repository of most of the writings on the subject, and the paper was widely quoted. All of the early literature on train resistance refers to the JOURNAL as the source of much original information.

The height of the train resistance formula campaign came about 1902, when the soundness of some of the conclusions of the paper were attacked. Mr. Blake was abroad that year and was present at the office of the Siemens-Halske Electric Company in Berlin just as the proof sheets of the report on the famous Zossen high-speed railway tests came in. He was permitted to send some summary sheets to New York for publication long in advance of other publicity. The Zossen results vindicated the JOURNAL'S reasoning and the conclusions were driven home by a series of editorials.

When in 1904 the Electric Railway Test Commission was organized in connection with the Louisiana Purchase Exposition, to utilize the facilities of the exposition for scientific investigation, Mr. McGraw was invited to become one of the five

members in recognition of the work which his paper had done in encouraging the laying of a sound engineering basis for railway work.*

The Test Commission produced an elaborate and valuable report which many were anxious to have published in book form. As no one else would finance the printing, Mr. McGraw agreed to do so because he said it had to be made available to the industry.

The JOURNAL also did an important work for the industry along power plant lines beginning back in the early '90s. The rapid expansion of the electric railway business created an enormous market for power-plant machinery, because the railways required power on a large scale and required it at once. Power was not available from lighting plants in the necessary quantities, and of the proper variety for railway use, so that each railway, no matter how small, had to have its own plant. Beginning in 1891 or earlier, articles on power plants and power plant practices became conspicuous. In 1897 the paper secured from a well-known engineer, Dr. Charles E. Emery, a notable series of articles on engines for electric railway power plants. This began in the "Souvenir" issue of that year and continued into the following year. The articles formed a veritable treatise on the subject and were of great value to the industry.

As each important power plant was built for an electric railway property, it was described fully in the paper in order to illustrate the technical advances. From time to time articles of a more general nature were published, including many editorials on all phases of power development.

This continued until, in recent years, electric railways have tended more and more to purchase power from central stations. To secure operating economy, large power plants and super-power plants have been developed to generate electric power on a large scale, distributing it to all classes of customers. The electric railway makes an excellent customer for such a plant, and in many cases can buy power cheaper than generate it. This situation has naturally been reflected in the pages of the JOURNAL, which, of late years,

*James G. White was chairman of this commission; H. H. Vreeland, treasurer; Mr. McGraw, secretary; the other members were George F. McCullough and W. J. Wilgus.

have contained proportionately much less material on this subject.

ACTIVE INTEREST TAKEN IN ELECTRIFICATION

About the time that train resistance had become reasonably well understood, it happened that the electrification of steam railroads began to attract attention. The JOURNAL fortunately was in a position to be of great assistance in this development. The task of disseminating information on heavy traction fell naturally upon the paper because most of the pioneer work in this line was done by men trained in electric railway work.

The application of electric motive power in hauling heavy trains began, in this country, with the electrification of the Baltimore & Ohio Railroad tunnel in Baltimore in 1894, but it was nearly 10 years thereafter before railroad managers became seriously interested. Even then the railroads were very slow to recognize the electric locomotive as a coming thing, and made installations only as necessitated by tunnel conditions. In the meantime the JOURNAL kept hammering away, editorially and by the best of technical news service, to convince transportation men that there was a field for electric operation of trains. That this work was thoroughly done was indicated by the extended use of the paper for reference on this subject. A recent French work on electrification in the United States, as well as American bibliographies on the subject, are replete with references to the paper. From the beginning all important installations have been fully covered and their significant features have been pointed out.

CAMPAIGN FOR PUBLICITY

While, with the industry, the JOURNAL was becoming more technical, the publishers and editors of the paper did not confine themselves to engineering. One thing they early recognized was the need for publicity of electric railway affairs if good public relations were to be preserved. The JOURNAL took a leading position in this matter, far ahead of that occupied by railway managers generally. Editorially and in news articles it preached the gospel of frankness in dealing with the public. Progress was slow, but in time results began to come, especially as public service commissions increasingly required full information to be filed. Now, of course, publicity is accepted as the normal thing.

In May, 1908, Mr. McGraw purchased from Hugh M. Wilson the only serious competitor of the STREET RAILWAY JOURNAL, the *Electric Railway Review*. With the first issue of June the two papers were combined as the ELECTRIC RAILWAY JOURNAL.

At the time of the consolidation of the JOURNAL and the *Review* the latter was in its eighteenth year. The paper was started in Chicago in 1891 as the *Street Railway Review* by H. H. Windsor, with whom was associated Fred S. Kenfield, Western advertising manager of the STREET RAILWAY JOURNAL. Ten years after the *Review* was started Mr. Windsor sold his in-

terest in the paper to his partner, who organized the Kenfield Publishing Company. Mr. Kenfield in turn sold the property in 1906 to Mr. Wilson, publisher of the *Railway Age*, and left the publishing business.

The *Review* was improved in every way by Mr. Wilson and became an active competitor of the JOURNAL.

When the JOURNAL absorbed the *Review* its staff experienced a welcome increase. In addition the JOURNAL gained several editorial features, including the daily edition issued in connection with the annual convention of the Electric Railway Association and the annual statistical issue.

standardization of the terms used electric car building and maintenance. It was an outstanding service of the McGraw Publishing Company to the industry.

The present publication of electric railway directory was an outgrowth of early work done on the paper. It dates back to June, 1885, for in the issue of the STREET RAILWAY JOURNAL for that month appears an official list of street railway ways of the United States and Canada. It continued to be printed monthly until June, 1892, after which it appeared only quarterly for a period of 5 years. By 1897 the directory had grown so that it was printed separately in the form of a booklet about 4 in. x 6 in. in size, as a supplement to the paper. This began the second stage of its development. The booklet was not circulated generally, but was printed mainly for advertisers. For each railway it gave the officers, train mileage, and numbers of motor and trail cars. There was no advertising in it. Beginning with the issue for February, 1904, the directory became essentially the McGraw Electric Railway Directory of today, with a page size of 4 in. x 8½ in.

The Dictionary and the Directory

A FEW months before the JOURNAL took over the *Review* in 1908, Jan. 1 of that year to be exact, the paper had engaged as associate editor, Rodney Hitt, who for nearly 6 years had been connected with the *Railroad Gazette* and who had had valuable experience in compiling and revising several of the railway dictionaries which the Boardman Publishing Company issued in co-operation with committees of the steam railroad associations. Plans were soon laid to publish a similar dictionary for electric railways in co-operation with the American Street and Interurban Railway Association.

As an advisory committee on the proposed dictionary, the association appointed H. H. Adams, New York City; Paul Winsor, Boston, and Richard McCulloch, St. Louis.

The preparation of the dictionary went along steadily during the en-

ding two years, and it was completed during 1911.

The book comprised 355 pages, of which 63 contained definitions to the number of 2,200. The remainder was made up of illustrations—pictures and drawings of cars and parts of cars, with details of equipment. As stated by the committee, the primary purpose of the dictionary was to assist in bringing about

The Journal from 1908 On

SINCE 1908 the most conspicuous single addition to the service rendered by the paper has been the improvement in the field of maintenance. The editors realized that the subject of maintenance had become so important in the eyes of the electric railway operator that they should give it more intense treat-

ment. Consequently, a special maintenance number, the first of an annual series which has continued until the present time, was issued April 4, 1908. In 1913 the number and range of the articles on maintenance were increased and segregated in a special department.

This equipment and maintenance section was well received in the field. It resulted in the further development of the maintenance service, devoting an entire issue each month to mechanical and engineering matters, except for the timely new material which always has the right of way. Such a plan was started with the issue of February 23, 1911. The regular weekly equipment and maintenance department was omitted. Later, the weekly department was restored, supplementing for the weekly subscribers the service furnished by the monthly.

INTEREST IN BUS MATERIALIZES

The JOURNAL early foresaw that electric railway managers should be well informed on motor bus developments. It published articles on the place of the bus and advocated



Motor Maintenance and Storage in 1881

Reproduction of a wood cut in one of the early issues of the STREET RAILWAY JOURNAL

proper co-ordination of bus and rail service. The paper was in a difficult situation because for the ultimate good of the electric railway industry it had to take an advanced position. The electric railway industry had suffered so keenly from jitney competition that it was in no mood to discuss the subject and in general resented the suggestion that electric railways should operate buses. The paper urged that, as transportation experts, the railways should control a complete co-ordinated system. But not all railway managers believed that buses could be operated at a profit and they hesitated to go into the business. They did not like to see their favorite paper advocating what seemed to them to be a suicidal policy. Yet it was clear to the JOURNAL editors that a great service could be done both the electric railways and the independent bus operators by showing the proper field of the bus and by preaching the principle of helpful co-ordination rather than destructive competition.

The logical answer could only be a separate paper with a bus appeal, which would reach both the bus operator and the electric railway interested in bus operation. Such a paper, named *Bus Transportation*, was started in January, 1922.

Harold V. Bozell, then co-editor of the JOURNAL was appointed editor of the new paper as well, and Carl W. Stocks, managing editor. Mr. Stocks became its editor on July 1, 1922, when Mr. Bozell was transferred to the *Electrical World*.

The starting of a bus paper by the McGraw-Hill company was considered by electric railway men generally as a wise move. The opinion was not unanimous, however. Without waiting to see how the publishing plan would be worked out, one of the state electric railway associations voiced extreme opposition in a formal resolution.

The JOURNAL continued its plan of treating the bus and opposition to the new venture soon died down. In due course the electric railways began to show a genuine interest in the bus, as was well illustrated at the 1923 and 1924 conventions of the American Electric Railway Association, where bus exhibits were the most conspicuous feature. In fact, several of the railways which objected to the publication of *Bus Transportation* are large users of buses today.

The depression in the industry resulting from the high costs attend-

ant upon the war reacted unfavorably upon the JOURNAL from the business standpoint. Many advertisers stuck by faithfully, even when business was dullest, but the mounting costs of production had the same effect on publishing as on electric railway operation. Retrenchment was necessary, but even though the paper was losing money, the essential editorial service was maintained.

SOME CHANGES IN THE STAFF

As Mr. Blake approached the end of a thirty-year period of service, with the JOURNAL, he appreciated the fact that he should have associated with him a younger man of the executive type of mind and trained to relieve him of details. Accordingly, Harold V. Bozell, in February, 1920, became associate editor of the paper. He was promoted to the position of co-editor with Mr. Blake a few months later, but in July, 1922, was transferred to the *Electrical World*, becoming co-editor of that paper with W. H. Onken, Jr.

When Mr. Bozell was transferred to the *Electrical World*; Harry L. Brown, who since 1915 had been first Western editorial representative, then

associate editor and later Western editor, with headquarters in Chicago, except for 20 months of military service, was transferred to New York as managing editor. On Jan. 1, 1923, he was appointed co-editor with Mr. Blake and placed in executive charge.

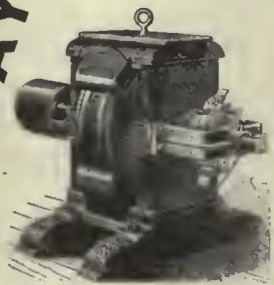
During 1923 the editorial staff was increased with a view to rendering a more practical service to the industry. To permit this, three new men were secured from electric railway properties, Messrs. Charles Gordon, J. A. Miller, Jr., and M. B. Knox, and one from a consulting engineering practice, Morris Buck. G. J. MacMurray and C. W. Squier, in addition to Mr. Blake, also members of the present staff, had been with the paper for a number of years.

As executive editor, Mr. Brown believed that the electric railway industry, with returning prosperity could and would support this more comprehensive editorial service. Mr. McGraw was willing to back him up. The field has responded; the paper has won increased recognition, and the revenue from advertising has grown so that this standard of service can be maintained and improved upon in the future.

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THE VAN DEPOELE ELECTRIC

RAILWAY



SYSTEM.

The Van Depoele Electric Manufacturing Company,

203 VAN BUREN STREET. CHICAGO, ILL.,

Owning the Van Depoele Patents for Electric Railways and for Van Depoele Motors, are prepared to equip railways with their Electric System.

We claim to have the best and most economical Electric Motor in the World.

We are not Selling Stock, but Doing Business.

Would be pleased to furnish estimates on any proposals or show drawings to extend lines or existing ones right through.

Van Depoele Electric Manufg. Co.

The First Advertisement of Any Electric Railway Equipment to Appear in the Paper.
This Was in the Issue of December, 1885.

"Souvenirs" a Series of Text Books

THE story of the ELECTRIC RAILWAY JOURNAL would not be complete without further reference to the annual which has been published since 1891 just prior to the convention of the American Street Railway Association, later the American Street and Interurban Railway Association, and still later the American Electric Railway Association. The purpose of this publication at the outset was to acquaint the members of the association with the local street railway situation in the convention center, and to give them full information regarding the association officers and their activities.

The annual was distributed long enough in advance of the convention to permit those who expected to at-

tend it to receive their copies before starting, and thus prepare them to make the most of their opportunities. Those who remained at home benefited also, through being furnished with unusually complete information regarding railway conditions in a particular section of the country.

The annual was at first known as the "Souvenir," and it was issued as a supplement to the paper. It was printed on stock of finer quality than the regular issues and no expense was spared on illustrations and text preparations. Later, the "Souvenir" became a section of a regular issue, printed and bound separately, but paged so as to bind in its proper place in the volume. Still later, as

at present, one of the regular issues was enlarged to accommodate the articles appropriate to the occasion, the enlarged issue being known as the Convention Number.

In 1907 the electric railway association began the practice of holding most of its meetings at Atlantic City, N. J., thus obviating the necessity for the kind of a program which the Convention Issue had provided for 16 years. The plan was changed, therefore, for issues of Atlantic City convention years, at least, to one under which a review was given of the progress made in the art along some lines particularly active at the time. Examples are heavy traction, welfare work, interurban practice, one-man cars, and public relations. The table published herewith gives the full list of subjects.

The Convention Numbers of Electric Railway Journal

Year	Convention City	Contents of Convention Number	Year	Convention City	Contents of Convention Number
1891	Pittsburgh	History of American Street Railway Association—Articles regarding Pittsburgh and Allegheny railways—Articles about manufacturers—List of exhibitors (117)—Membership list of association.	1907	Atlantic City	First Atlantic City convention—Railroad electrification issue—All phases of electrification, including maintenance, were taken up—There was a feature article by Philip Dawson on electrical equipment of main line railways in Europe.
1892	Cleveland	Articles regarding the association and the convention program—Biographies of local committee members—Descriptions of local railways—Manufacturers' section.	1908	Atlantic City	Operating practice—Articles dealt with employment of trainmen, welfare work, train dispatching, tickets and fares, track, overhead, carhouses, repair shops, etc.
1893	Milwaukee	Extended articles on several local railway systems.	1909	Denver	Twenty-fifth anniversary—Tramway situation in Denver covered, as well as interurban railway construction and practice in the West—History of preceding five years covered year by year.
1894	Atlanta	Tenth anniversary. Elaborate article on Atlanta—Biographical notes of American Street Railway Association officers and committee members—History of the STREET RAILWAY JOURNAL—Other articles—Totaling 122 pages of text.	1910	Atlantic City	Development of traffic—Articles took up promotion methods in different parts of the country—As illustrations had to be scattered through text, coated paper was used throughout—it was lightly tinted in green.
1895	Montreal	Electric railway systems of Canada—Long illustrated article on the American Street Railway Association.	1911	Atlantic City	The Public Service Railway system was exhaustively covered in all departments.
1896	St. Louis	Signed articles by experts covering different aspects of local street railways—Statistical study of great street railway properties of America—Progress of the year—Section on new appliances and engineering development.	1912	Chicago	An elaborate study of the Chicago properties, going into many phases of their construction and operation.
1897	Niagara Falls	Articles on electric railways of Niagara region—First article of a series by Dr. C. E. Emery on engines for electric railway power stations—Large number of short articles, some signed.	1913	Atlantic City	Recent progress—The topics thoroughly covered were track construction, power generation, car design, repair shop methods, fare accounting, freight handling, signals and self-propelled cars.
1898	Boston	Articles regarding the local situation and numerous general articles.	1914	Atlantic City	Public relations—Articles, a number contributed, on three phases of subjects: Meeting the public, operating conditions, and regulation.
1899	Chicago	In addition to articles on local railway situation, electric railway practice in several foreign countries was covered.	1915	San Francisco	Pacific Coast properties—Signed articles relating to various electric railway matters.
1900	Kansas City	International engineering—Besides space given to local situation and to convention, the issue covered railway practices in several foreign countries and included high grade technical articles such as design of large railway generators, by H. F. Parshall; electric railway motors by John Lundie, etc.	1916	Atlantic City	The development of electric railway cars was treated from different points of view.
1901	New York	More study of local transit situation in all phases, remarkably complete. The leading article was written by Frank E. Ford and contained, so far as is known, the first diagrams ever published, showing the location of cars on a street railway system.	1917	New York (Conference but no convention this year)	More service at less cost—This issue was devoted to the development of one-man car operation.
1902	Detroit	Besides featuring the local situation, authoritative articles were given on interurban traction covering many roads. Notable article by Philip Dawson on suburban transportation conditions of London.	1918	New York (Conference but no convention this year)	Issue devoted to four subjects as follows: What war has meant to Canada's lines; How safety cars save fuel and men; British tramways severely affected by war; Disabled soldiers in electric railway service.
1903	Saratoga	While local situation was covered, principal contents were general articles on track, overhead, rolling stock, power equipment, and repair shop methods.	1919	Atlantic City	Selling transportation—Means for getting electric railways on a profitable basis, including several articles on the zone system. This was the year of the printers' strike, but the Convention Issue was out just in time to avoid it. The convention report number had to be published in Baltimore.
1904	St. Louis	Twentieth anniversary. Besides the local situation, history of the American Street Railway Association was given and the evolution of the industry was covered in a series of articles. Achievements in detail were given year by year and statistics presented in graphical form. There were notable articles on the New York subway, its power plant and distributing system.	1920	Atlantic City	Mass transportation—Signed articles by experts on several phases of the problem of handling passengers in large groups.
1905	Philadelphia	Comprehensive study of Philadelphia street railway systems. New make-up adopted with text and line cuts on rough paper, halftones on coated paper in sections—commercial type face employed. This issue contained the first maps of a street railway published in this country, so far as is known, showing by the width of the lines the normal number of cars passing over that line within a definite period.	1921	Atlantic City	Better salesmanship in transportation—The articles show how all departments can help in the sale of transportation, there being articles signed by several experts.
1906	Columbus	In addition to articles on the Columbus street railways and neighboring interurban railways, there were excellent articles on rolling stock, generation and distribution of power, carhouses, schedules, freight and express, interurban economics, etc.	1922	Chicago	Chicago transportation experience—All phases of this subject were discussed by experts in signed articles.
			1923	Atlantic City	Trends in car development—An analytical study of the different phases of car design tendencies.
			1924	Atlantic City	Modernization—A group of signed articles on the introduction of modern methods into the work of every department of the electric railway, contributed by outstanding men of the industry.



The North Lexington Carhouse Has Been Converted Into a Bus Garage

Buses Run Along Paul Revere's Route

Historic Towns in Eastern Massachusetts Formerly Served by Single-Track Lines of the Middlesex & Boston Street Railway Now Have Bus Service Operated by the Same Company—More Economical Operation Has Been Obtained on Routes Where the Traffic Is Light

LARGE areas in one of the oldest sections of the United States have recently been provided with modern bus service in place of street car service. In spite of its age, however, this district is one which has never been closely built up and the passenger traffic on the railway has always been comparatively light. When it became necessary some time ago to consider the problem of rebuilding several miles of its track, the Middlesex & Boston Street Railway, Newtonville, Mass., determined that under these traffic conditions it would be more economical to undertake bus operation. This has been done with the result that operating costs have been materially reduced without affecting the revenue at all.

The more important of two such routes recently established by the railway begins at Arlington Heights, where connection is made with the Boston Elevated Railway, and runs in a general northerly direction through Lexington and Bedford to Concord and Billerica. These towns are all in Middlesex County and the bus line in part follows the famous

route taken by Paul Revere in 1775 when he rode to "spread the alarm through every Middlesex village and farm."

The new bus route follows the old car route from Arlington Heights through Lexington and Bedford. From the latter town one branch goes to Billerica and another to Concord as did the railway. From Billerica to Arlington is 13 miles and from Concord to Bedford

is 4 miles, making the total trackage on which car service has been suspended in the last few months about 17 miles.

Formerly, a two-hour street car headway was run from Billerica to Arlington, and a similar two-hour headway from Concord. This gave hourly service between the junction at Bedford and the Arlington terminus. Short trips going only as far as the Bedford town line reduced the headway to a half hour through Lexington. For the most part buses are now operated on the same headway as the cars formerly had, except that on account of the small carrying capacity of the bus as compared with the street car some trips have



Routes on Which Bus Service Has Replaced Car Service in a Historic Section of Massachusetts

been "doubleheaded." It is expected, however, that next summer it will be necessary to increase the bus mileage considerably to take care of the heavier riding at that time of year.

The running time is the same as before, except that schedules are better maintained on account of having no turn-out delays. From Arlington to Concord or Billerica the round-trip time is 2 hours, which corresponds with the headway. One bus therefore suffices for each of these services. From the Bedford line to



Where Bus and Car Lines of the Middlesex & Boston Street Railway Connect at Lexington

Arlington two more buses are used to supply the half-hour headway required between these points. These four buses are run all day. During rush hours, however, extra trips are run from the center of Lexington, providing a 15-minute headway between there and Arlington. In this area standing loads are permitted.

The last car was operated on this route on Sept. 15, 1924, and since that time the traffic has been handled entirely by bus. So far there has been no notable increase or decrease in the number of passengers carried. Fares are the same with the buses as they used to be with the cars. There are three 10-cent zones between Arlington and Billerica and the same number on the branch running to Concord. No fare box is used. Fare is handed directly to the operator when the passenger enters the bus, and its receipt is recorded on an International cash and ticket register. At the end of each fare zone the operator stops the bus and goes through to collect second or third fares. This method of collection is feasible because the second and third fare points are far out in the country and the number of bus passengers is small. Free transfers are issued at Lexington between the railway's cars and buses.

When bus operation was undertaken in this district the North Lexington carhouse of the railway was converted into a garage. The cars which continue to operate in Lexington were transferred to the Waltham division, and are now housed at, and operated from, that carhouse. For greater convenience the swinging doors of the carhouse at Lexington were converted into sliding doors of smaller dimensions, as large entrances were no longer needed. The pits in the carhouse were filled in and the necessary changes made in the tool equipment to permit the repair of the motor vehicles. It is planned in the future to concrete the floor of the carhouse, but this has not yet been done. A gasoline filling station is located in front of this building.

The new automotive equipment of the Middlesex & Boston Street Railway consists of 12 White Model 50-A buses with Bender bodies. Of these seven are at Lexington and five at Natick. Slight modifications have been made in the design of two of the most recently

purchased in order to give more knee room for the seated passengers, and to provide additional space for standing passengers. This change has increased the over-all length about 7 in. An interesting feature of the design is a rear bumper which has been put on to prevent damage to the body if the operator backs into a tree, pole or other obstruction.

The four all-day buses operated from the North Lexington garage and three trippers cover altogether about 800 miles per day. Each bus is inspected daily at any convenient time when not needed for service. An experienced auto mechanic who formerly was connected with the White Motor Company in Boston has been engaged to supervise bus maintenance for the railway. The fact that the White company maintains a large and well-equipped service station in Boston has been helpful in reducing the amount of repairs which it is necessary for the railway to take care of in its own shop.

Various kinds of tires have been tried to determine which is best suited to the particular conditions of operation. All tires are bought outright, however, and no tire supply contracts arranged on a mileage basis have been made. The railway expects that each tire will give at least 12,000 miles service.

As October, 1924, was the first full month of bus operation, the management feels that it is too soon to draw definite conclusions regarding the financial success of the experiment. The cost of operation has not yet been accurately determined, but the railway believes that the final figure will be between 25 cents and 30 cents per bus-mile. Even if the cost should reach the maximum believed likely, that is to say about 30 cents per bus-mile, it will be less than the previous cost of railway operation per car-mile. Moreover, it will also be lower than the present revenue per bus-mile, which is, as already mentioned, approximately the same as the old revenue per car-mile.

Among the advantages resulting from the substitu-



One of the Extra-Length White Buses on the Road from Lexington to Concord

tion of buses for cars in this instance were the release of track and line maintenance gangs formerly required for the Lexington division and a reduction in the supervisory force at the carhouse. No power need now be purchased from the Edison Electric Company, as the car line which has continued to operate in Lexington can be supplied with power over the railway's own feeders from other stations. Some of the cars which were released when bus operation was inaugurated have been placed in service elsewhere. Others, however, were considered too old and too heavy to be used any longer, and these were scrapped. Accidents have been fewer with the buses than they were previously with the cars.

protect itself in this respect the railway carries liability insurance.

As far as possible the trainmen who formerly operated cars in this division have been retained by the company in the capacity of bus operators. Those who were thought to be temperamentally unsuited for conversion into operators of motor vehicles were transferred to other divisions to operate cars there. Two mechanics who formerly worked in the pits at the 10th Lexington carhouse have been converted into bus mechanics, and one extra man has been hired. A number of shopmen were laid off.

At Natick, the Middlesex & Boston Street Railway operates five buses on a crosstown line. Here the situation is similar to that at Lexington, and the same general method of operation is followed. Service on 10 miles of railway route has been suspended. Buses operate from South Wayland to Natick, a distance of 8 miles, and a branch line covers 2 miles more. Because of very light traffic at the ends, the bus routes have been shortened a little from what the car routes used to be. The motor vehicles are housed here in a converted carhouse similar to that at Lexington.

Contracts have been made with the town of Wayland for the regular transportation of school children and with the Roxbury Carpet Company for carrying its employees. In order to handle this service properly the railway has just purchased an additional bus.

Personally I believe that these difficulties are capable of solution, and some progress is being made on these tramways with platform fare collection.

Another point that you raise in your report is the question of the low average speed in this country as compared with the average speed on American systems.

I am, of course, not in a position to defend all the undertakings in this country against the charge of slowness of operation, but I think you will agree with me that in London at any rate the average speed of tramcars both on our systems and on that of the London County Council is, at least, as high if not higher than the average speed of your American systems operating under similar conditions.

C. J. SPENCER,
General Manager.

METROPOLITAN DISTRICT RAILWAY COMPANY
LONDON ELECTRIC RAILWAY COMPANY
CITY & SOUTH LONDON RAILWAY COMPANY
CENTRAL LONDON RAILWAY COMPANY
55 Broadway, Westminster,
London, S.W. 1.

Nov. 21, 1924.

I received with unusual pleasure your letter of the 10th inst., and am very glad that you found your visit to the Old Country both interesting and edifying.

The report of your peregrinations was almost crowded with useful and informative data, much of which will be very handy for future reference. In the short space of time at your disposal I think that your report could hardly have been more complete, and your kindly personal references are appreciated. But the pleasure was not only on your side. Our several meetings with you were most enjoyable, and the interchange of experience and thought must necessarily stimulate and widen our interests in transportation from an imperial point of view.

J. P. THOMAS,
Operating Manager.

The Readers' Forum

Comments on Foreign Report*

METROPOLITAN ELECTRIC TRAMWAYS LIMITED
LONDON UNITED TRAMWAYS LIMITED
SOUTH METROPOLITAN ELECTRIC TRAMWAYS &
LIGHTING COMPANY LIMITED
55 Broadway, Westminster,
London, S.W. 1.

Nov. 19, 1924.

I have to acknowledge receipt of your letter of the 10th inst. and am very glad that you and your deputation, while having a very strenuous time in this country, enjoyed your visit. Any little thing that I was able to do to make your visit useful and enjoyable I was very glad to have the opportunity.

I received some few weeks ago a copy of your report and should like to congratulate you and your colleagues on its excellence.

In a very short time you seem to have got at the essentials of our problems in this country, especially in London, and I consider that your conclusions, while being frank and in consequence all the more valuable, are in the main, correct.

It is true, as you state, that in this country there has not been any considerable change in design of tramcars for the last 20 or 25 years. We are, I suppose, instinctively conservative. On the other hand, it is only fair to realize that the zone system of fares, or rather the stage system of fares in this country, has prevented the development of the "pay as you enter" system which is so well known in the States.

The time taken to collect fares, issue tickets, etc., on the platforms has been a difficulty preventing the introduction of "pay as you enter" principles.

*This report of the committee on foreign operation, American Electric Railway Association, was published in full in this paper, issue of Sept. 20, 1924, pages 413 to 459, inclusive.

Tire Failures Can Be Reduced

THE GOODYEAR TIRE & RUBBER COMPANY
AKRON, OHIO, Nov. 19, 1924.

We wish to express our appreciation for your timely comments in the Nov. 8 issue of the ELECTRIC RAILWAY JOURNAL, under the heading "More Attention to Tiring Will Save on Re-tiring."

The rapid strides being made in the bus industry call for a close co-operation between the bus engineers as well as the actual operators of the buses. In cases where mass transportation is a factor and standees are permitted, the tires are badly overloaded and go out of service prematurely.

It has been our experience that manufacturers have equipped their units with tires of the proper size based on the seating capacity of the bus, but where overload is a factor the use of larger tires is very desirable, and is a distinct advantage for the operator.

Continuity of service is of great importance to the bus operator. When delays occur on the road due to tire failures, the loss of revenue is a serious factor, while the interruption in operating schedules seriously affects the good will of the service.

We have endeavored to assist members of the American Electric Railway Association by making analyses of their operating conditions and making impartial recommendations regarding their tire equipment. This service is always available to members of the association.

J. M. LINFORTH,
Manager Highway Transportation Department.

Association News & Discussions

Midwest Has Good Meeting in St. Louis

Association Hears Papers on Street Congestion, Noise Reduction, Bus Operation, Freight Haulage, the Future of the Interurban and Many Phases of Electric Railway Work of Current Interest

ON NOV. 24 and 25 approximately 150 members of the Midwest Electric Railway Association, embracing the states of Colorado, Nebraska, Oklahoma, Kansas, Arkansas and Missouri, assembled at St. Louis, Mo., for the midyear meeting of the association. Subjects of current interest, ranging from an analysis of city street congestion to a study of bus operation by electric railways, furnished a full technical program, which was supplemented by an inspection trip on Tuesday afternoon to points of interest on the property of the United Railways of St. Louis and a visit to the plant of the St. Louis Car Company.

The meeting was opened by President Charles W. Ford, general superintendent Kansas City, Clay County & St. Joseph Railway. He called on R. J. Lockwood, assistant manager for the receivers United Railways of St. Louis, to introduce, in turn, Hon. H. W. Kiel, Mayor of St. Louis, and Hon. Rolla Wells, receiver United Railways of St. Louis and former Mayor of the city. Mayor Kiel expressed a firm conviction in favor of providing rates which would make high grade service to the public possible. He warned railway men that they must keep abreast of the times and of changing conditions in their industry if they intended to continue handling the transportation facilities of the modern city.

Rolla Wells said that the primary thought of the receivers of the United Railways was to insure adequate and improved service to the public. He stressed the importance of making favorable public contact through employees. So far as the public's interest in the utilities is concerned, Mr. Wells went a step beyond Mayor Kiel in saying that the public is not only interested in the condition of the utilities, but is in a measure actually responsible for this condition because of the control which is exercised through public regulatory bodies. Restriction of the rate of fare below that necessary to render proper service involves a question of the right of any public official to restrict the quality of service rendered the public, which, he maintained, wants good service and is ready and willing to pay for it.

F. G. Buffe, general manager for the receivers Kansas City Railways, responded to the addresses of welcome. He said that the optimism expressed by the speakers relative to the future standing of the utilities in the public mind augured well for the prospects of the industry. The broadening view-

point of railway men was held up as another encouraging sign and he pointed to the rapid crystallization of opinion in favor of fitting the motor bus into the general transportation scheme, wherever it is suitable, as an example of this. He also held that the public and the commissions are regaining confidence in the electric railways, and pointed to the popular sentiment in Kansas City in favor of the railway company operating buses, exclusively, in such locations as they are required.

MR. STOFFEL SHOWS PROGRESS OF FREIGHT HAULAGE BY ELECTRICS

The technical program was opened by T. H. Stoffel of the Westinghouse Electric & Manufacturing Company, who read a paper on electric railway freight haulage. A comprehensive illustrated article on this subject by Mr. Stoffel was published in the Sept. 27, 1924, issue of the *ELECTRIC RAILWAY JOURNAL*. In his present paper Mr. Stoffel said that the transportation of freight by electric railways has now reached a stage where it has become an important part of their business. It can no longer be considered an experiment, either from an operating or revenue producing standpoint. The results obtained from freight operation in practically every case where a consistent plan of development has been laid out and followed have more than met expectations. The gross income from this business during 1923 was three times what it was in 1913 and amounted to more than \$50,000,000. In addition, the progress made in the development of freight business during the current year is greater than for any similar period in the past. Net earnings vary from 15 to 30 per cent of the gross, after paying in full all items directly chargeable to freight operation and allocating other items, including taxes, on a prorated basis.

Some of the advantages which accrue to certain classes of shippers from the service made available by electric railways were outlined by Mr. Stoffel and specific examples of such situations were described. This included instances of jobbers and manufacturers extending their markets by being in position to make electric railway deliveries in territory formerly monopolized by competitors more favorably located geographically. He also cited instances of the development of profitable merchandise business by electric lines not able to handle heavy or long-haul tonnage. This was done by active co-operation with chambers of commerce and other

civic bodies in the towns for the purpose of locating new industries on the road, and by working with farmers' associations to aid them in reaching or developing new markets for farm products.

Mr. Stoffel described one situation in which the railway had been instrumental in inducing farmers to raise tomatoes on land which had formerly yielded only poor grain crops and was rewarded by the development of a thriving new canning industry that produces a very profitable freight business for the road. In another case a profitable business from handling fruit direct from grower to market was built up as the result of the railway taking the initiative in bringing the farmers and the commission men together.

The place of the motor truck in building freight business for electric lines was analyzed. Mr. Stoffel went into this subject both from the standpoint of using the truck as a feeder for extension of service into territory beyond the rail line and also for various terminal purposes. The present status of pick up and delivery service was discussed and some of the problems connected with this subject were outlined. He said that complications arise when the railway attempts to give pick up and delivery service. Shipments are forwarded subject to delivery on presentation of bill of lading only, and usually such bill of lading is at a bank attached to the draft and is not available when the shipment is delivered. This makes it necessary in many cases to haul the shipment back and forth several times before delivery can be legally effected. A consignee, such as a large department store, which may have two or three warehouses in addition to the retail store, requires shipments to be moved twice or more before correct delivery can be made. A consignee may be only a broker having desk room in an office building, in which case shipment would have to be taken back to the freight terminal and held until disposition is given.

Mr. Stoffel concluded that all rail lines will eventually find it necessary and expedient to furnish pick up and delivery service, but expressed the belief that when that time comes the service can be most economically and efficiently rendered by employing a single responsible and dependable agency to do the work for all lines in a given terminal community.

In answer to a number of questions Mr. Stoffel explained some of the various phases of pick up and delivery service in connection with freight traffic. He said that on the basis of experiments conducted by the steam railroads at Baltimore the actual cost of such service would require a charge of approximately 15 cents per 100 lb. in excess of the regular tariff. Under the

experiment being conducted there, the shipper pays the 15-cent charge at his end of the movement and the consignee pays the same charge for the delivery at the other end. He said further that where such pick up and delivery service was made optional with shippers it had not proved to be successful, as most heavy shippers were equipped with their own motor trucks and preferred to keep these busy handling their shipments to and from freight houses rather than to pay the extra charge for this service by the railroad. He said that such optional service was used most by the infrequent shipper, and that the tonnage on this class of business was very light and did not pay for the service. Another objection to optional pick up and delivery service was held to be the delay caused by the necessity of the agent to determine whether or not such service is desired on each shipment.

DISCUSSION ON STREET CONGESTION REMEDIES

City transportation and congestion were treated in a paper by C. E. Smith, consulting engineer city of St. Louis, which is printed elsewhere in this issue. In the discussion of the paper Mr. Bennett of the United Railways said that although he was heartily in accord with no parking regulations a large part of the short-haul riding produced on street cars by such regulation would come in the rush hour, thus increasing the peak on the railway. R. P. Woods, vice-president and general manager Kansas City, Clay County & St. Joseph Railway, said that marking of arterial highways was a forward step recently taken in Kansas City. He also felt that no-parking regulations should be made to meet the specific conditions existing at certain points in the business district. Raised safety platforms are impracticable on narrow streets, according to Mr. Woods, and are objected to by fire departments.

Samuel Weimer, chairman of the rapid transit committee of the St. Louis Board of Aldermen, expressed the belief that a subway for street cars in St. Louis would be beneficial and was practicable. He said that buses and street cars on the same streets increased congestion and that one or the other must be taken off.

The use of the bus in city transportation service was the subject of a paper presented by B. Hilburn, general manager Tulsa Street Railway, which will be abstracted in a later issue. Discussing the paper, A. E. Reynolds, vice-president and general manager Springfield Traction Company, said that the selection of the proper type of bus to meet the service requirements was a difficult problem. He expressed the conviction that there is a place and a future for the bus in the general scheme of city transportation.

E. R. Kinsey, president of the Board of Public Service of St. Louis, said that the bus is here to stay and that it has a useful field to serve. He maintained that every rapidly growing city needs some form of flexible transportation to give service in new communities where railway extensions are not practicable financially. It is not reasonable to expect the railway company to spec-

ulate on the development of a new community to the extent of making the heavy investment required to put in an extension of the rail service, and consequently he felt that during the period of development the bus is the logical form of transportation until the community grows to a point where the increased traffic justifies the extension of the rail line. Buses should be on the same footing as railways in regard to regulation, according to Mr. Kinsey, and the existing utility company should handle the entire transportation service of the city, including the buses. This makes for economy and efficiency, he said, because of the elimination of unnecessary duplication of service. However, bus service should be given where there is a demand for it and where the people are willing to pay the increased fare necessary to support this service. Allowing independently operated buses to skim off the cream of the profitable traffic in competition with street cars works to the ultimate ruin of the entire transportation service of any city.

In answer to a question, Mr. Hilburn said that the company is operating 16 and 25-passenger buses in Tulsa and that the saving in cost of gas on the smaller vehicle is offset by the increased maintenance. Comparatively high maintenance is caused by lack of provision in the design for overloads. The total operating cost was given at 19 cents per bus-mile, including 3 cents for depreciation and 1½ cents for insurance. He said that insurance was purchased on a mileage basis, the rate being the figure given. In answer to another question, he said that the total amount paid by the insurance companies in settlement of claims was less than the accumulated premium paid.

Mr. Woods outlined some of the experiences of the Kansas City, Clay County & St. Joseph Railway in going into the bus business to fight competition by independent operators paralleling the interurban line. He said that modern bus equipment in competition with the railway had caused a serious drop in the gross income, and that this had forced them to fight the competition by putting buses of their own into service. Study of the effect of a new hard road which was built parallel to the interurban, he said, disclosed the fact that 19 per cent of the passenger business lost was attributed to the use of private automobiles.

INTERURBANS MUST INTRODUCE NEW SERVICES AND NEW SELLING

A paper by D. W. Snyder, vice-president Illinois Power & Light Company, on the future of the interurban was delivered on Tuesday morning. This future, Mr. Snyder pointed out, is uncertain only in the same sense as that of any other business in process of evolution. The passing out of some of the smaller and weaker roads has created a false impression of the status of the electric railways. He attributed these failures to the natural reaction from a boom building period in which some roads were built that were not justified by density of population or conditions of competition.

The situation of the interurban road following the advent of the hard roads and the bus was likened to that of the

barber shop when the safety razor was introduced. By making their shops more attractive and by pushing other lines like massages, shampooing, hair singeing, etc., the barber has actually put his business on a higher plane and has become much more prosperous than when his very existence was threatened by the safety razor. It was pointed out that the barber accomplished this by first putting his business in better position to serve his customers, and then adopted modern methods of selling this improved service to the public. Similar methods, it was held, would assure a useful and profitable future for the electric railways.

Results accomplished by the North Shore Line in going from receivership to the first Coffin prize in seven years were held up as a shining example of what can be done by proper management. Although the North Shore Line is in a special situation, he maintained that the same fundamental methods would apply to the industry as a whole. He advocated building on the principle that the first essential in selling service is to have good service to sell.

Mr. Snyder felt that more publicity should be given to the comparative cost of travel by automobile and interurban, and cited experience on the Illinois Valley division of the Illinois Traction System as an example of what could be done in inducing traveling salesmen to use the interurban. He said we have heard much about modernization, but that as a whole the industry has not yet grasped the full significance of what modern equipment and methods will do in reducing operating costs and attracting new business.

INTERURBANS ESPECIALLY CAN UTILIZE THE BUS

Although the motor bus can be and has been ruinously destructive to interurban electric railways when allowed to compete unrestrictedly, this vehicle is only another transportation tool, Mr. Snyder said, which in the hands of competent transportation men can be profitably applied to improve existing facilities and attract new business. He felt that there are few interurban railways that cannot make use of the motor bus, and none that can afford to ignore it. He sounded a note of caution, however, by saying that even now the same ill-advised overexpansion that has marked the development in other lines of business is going on in the introduction of buses in some situations.

FREIGHT BUSINESS OFFERS GREAT POSSIBILITIES

Referring to the growth of freight and express business, Mr. Snyder said that the future is far from gloomy. He cited the recent completion of a \$1,000,000 freight terminal in Indianapolis as an example of the proportions which this business is beginning to assume. Last year's gross freight revenue on the North Shore Line exceeded its total revenue of eight years ago from all sources. Statistics prepared by the A. E. R. A. showed an increase in electric railway freight business during 1923 of 35 per cent. The Illinois Traction System freight business is now greater than its passenger business. He said that 32 electric loco-

tives are now in service on his road for handling this business and that the first of six new 80-ton locomotives of the articulated type has been put into service. Long-haul freight business is being developed, M. C. B. standard equipment is used and is interchanged with steam roads. Through rates, switching agreements and physical connections have been established with practically all steam railroads.

In the discussion, he advocated development of local trucking business by short interurban lines serving a number of towns. He pointed out that inefficient methods and improper maintenance make present independent truckers very wasteful, whereas an organized trucking service would attract business and make substantial savings in operating costs. He said the time has come for the small interurban lines to go into the trucking business, and unless they do so other interests will organize the terminal trucking within the towns they serve, and will then expand this service to duplicate that given by the railway between the towns.

A paper by R. W. Bailey, superintendent of the power and equipment Kansas City Railways, on the subject of noise reduction will be published in an early issue. In the discussion it was brought out that the practice of casting graphite plugs into comparatively hard brake shoe material is being tried out and seems to reduce materially the squealing of such shoes.

BUS SUBSIDIARIES OF RAILWAYS ELIGIBLE TO MEMBERSHIP

In the business session that followed the prepared papers Mr. Lockwood brought in a report prepared by a special committee on revision of the by-laws, which changes the rules of the association so as to admit bus subsidiaries of railway companies as active members and allows the representatives of bus manufacturers to join the association as associate members. This report was adopted. The resignation of Charles W. Ford as president of the association to take effect Dec. 1, at which time he will sever his connection as general superintendent of the Kansas City, Clay County & St. Joseph Railway to become a member of the sales organization of the Yellow Coach Manufacturing Company, was accepted by the executive committee. A special committee was appointed to draw up a resolution of appreciation of Mr. Ford's services to the association, and he was also elected to honorary membership. The executive committee elected Ernest Stenger, receiver Denver Tramway, president, to fill the unexpired term of Mr. Ford, and elevated R. B. Campbell, secretary and general manager the Arkansas Valley Interurban Railway, to the office of vice-president. Bruce Cameron, vice-president and general manager Joplin & Pittsburg Railway, was elected to fill the place made vacant on the executive committee.

At the banquet on Monday evening J. C. Hall, legal representative Missouri Public Utility Association, advocated increased interest on the part of utility men in legislative activity. He said that such interest should be directed toward supplying members of the legis-

latures with authentic information regarding the utility business. There has been a woeful lack of such activity in the past, with the result that indiscriminate competition and many other conditions detrimental to the service and growth of the utilities have been permitted to exist.

E. F. Wickwire, vice-president Ohio Brass Company, told of the work that is being carried on through the American Association for "friendlyizing" the public and also told of the publicity given the pleasant good-natured "Traction Tom" conception of the electric

railway industry to take the place the despotic "Traction Baron" attitude which had been allowed to develop the minds of the public and the press. Mr. Wickwire closed a humorous and entertaining presentation of this subject with the serious admonition that anything can be accomplished in the way of improving public opinion provided personal ambition is subordinated to the general objective of promoting the welfare of the industry. This thought was summarized in the words, "Anything can be accomplished if no one cares who gets the credit."

City Transportation and Street Congestion*

Importance and Permanence of the Street Railway in Any Scheme
Local Transportation and Various Methods of Relieving Street
Congestion, Speeding Up Cars and Attracting Patronage

By C. E. SMITH

Consulting Engineer City of St. Louis

TRAFFIC congestion came on suddenly with the automobile and will continue in varying degree depending on the success of relief measures. Business men are not yet thoroughly awake to a realization of the importance of the traffic congestion evil.

It is axiomatic that the transit lines should offer the smallest possible interference with other traffic, should be least interfered with, and should promote comfort and convenience to the greatest number. Nevertheless, the street car has been the worst sufferer from the increasing use of the automobile, because: (1) The normal increase in street railway business has been interrupted; (2) accidents and consequent costs of operation have increased; (3) service has slowed down, and as the automobile has educated the people to higher speeds they have been less tolerant of the speed of street cars; (4) there is a popular idea that the street car should be taken out of the way of other traffic and that it should be superseded by other means of transit. That the latter is not true is proved by the fact that each year the street railways of the country establish new records for passengers carried, showing that in spite of the auto bus and automobile which will supplement and not supersede the street cars, they are here to stay and must be provided for.

Even in New York City, which has the greatest measure of rapid transit and bus service, the street car business continues to increase. In 1923 more than 1,000,000,000 passengers were carried on street cars there, rapid transit lines carried 1,500,000,000, and the buses about 100,000,000. Even in London, where buses are used to the greatest practicable extent, the street cars carry more than half the surface travel.

There is ample evidence that street cars carry more than other agencies of transportation and take less space on the streets. Thus, in the Chicago Loop district 50 per cent of the traffic con-

sists of automobiles that carry 19 per cent of the traveling people, while street cars that constitute about 2 per cent of the street traffic carry 74 per cent. In Baltimore a traffic census showed that street cars, less than 15 per cent of the traffic, carried 89 per cent of the people, while other vehicles constituting 85 per cent of the traffic carried only 11 per cent. In Los Angeles during a rush hour street cars constituted 4 per cent of the traffic carried only 11 per cent. In Los Angeles during a rush hour street cars constituted 66 per cent of the people, while other vehicles constituting 96 per cent of the traffic carry 34 per cent. Similar figures might be continued indefinitely. A conservative estimate would place the street car riders at not less than 75 per cent of the traveling public. It would seem that their interests should have at least 75 per cent of the consideration.

City transportation for the great masses of people must continue to be provided by street cars. The peculiar nature of this business, requiring large investment in proportion to the revenues, and preventing expenses from being increased or decreased in proportion to changes in volume of business makes it peculiarly susceptible to changes in business conditions.

Nothing is clearer today to those familiar with the problem than that competition in street transportation is wasteful and must be eliminated so that facilities may be best co-ordinated with the traffic. Particularly must street car service be protected from unfair competition of favored, subsidized or unregulated agencies of transportation. Otherwise the mainstay of the public transportation system will break down and the great mass of the people will struggle along with inadequate transportation facilities.

Until the advent of the automobile the street car was the fastest means of transportation for general use in cities without rapid transit facilities, and it is still and will continue to be the preferred vehicle for mass transportation properly co-ordinated with bus service as may be expedient. But people are less tolerant of slow motion than ever

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fore, and the average of 10 m.p.h. made by city street cars no longer seems attractive. Speed is the slogan of the day and it seems that people are intolerant of even a moment's delay. The automobile is responsible for its speed mania.

It is most irritating to car riders to lag along while the motorman kills time in slack hours because his schedule time is too long or for other reasons. Slack time and needless stops and waits should be rigidly eliminated from the schedules of both city and suburban properties. The drift of street car passengers to automobiles will decrease and may actually turn back if the service can be speeded up and generally made more attractive.

There are many places where, by reason of former competitive and duplicate railway service, street car lines are unnecessarily long and may be shortened and reduced in number by a carefully studied plan of rerouting. Such a study in St. Louis indicated that 25 or 30 miles of track might be done away with and service improved by rerouting. This is being carried out little at a time. When handled properly the cost is small. Another way in which service may be improved, where conditions are favorable, is to run street cars express through areas of light business between areas of heavy loading and unloading, the intermediate business being handled by buses. This is being done successfully at Providence, R. I. (see ELECTRIC RAILWAY JOURNAL for March 15, 1924, page 10).

Both relief of congestion and improved transportation service in cities will be secured by the following measures:

1. Unification of all systems of transportation within a city, including street cars, buses and other agencies of mass transportation.
2. Single fare and free transfers within a single-fare zone, with appropriate charges beyond.
3. Expansion of facilities in amount and character best suited to the service.
4. Route through traffic so as to avoid the congested business areas.
5. Speed up service whenever possible; shorten schedule time in off-peak hours.
6. Establish loading platforms on busy streets for protection and convenience of car riders.
7. Provide storage yards for cars in just outside business districts to store peak-hour cars during day and thus avoid interference with other traffic and dead mileage when taking them out empty in the morning and back empty before the evening rush.
8. Reduce looping of cars and turn-backs in congested districts and operate rough runs to the greatest possible extent.
9. Avoid crossing of busy lines in congested districts.

City planners are quite free in recommending as one of the ways of reducing or rather avoiding increased congestion in business centers that building heights be restricted. The right to do this has been amply sustained in the courts. Boston is a notable example in this country. There

building heights have been restricted for about 25 years. But that precaution would seem to safeguard the interests of succeeding generations rather than to offer any measure of relief now.

Building heights may not be so easily controlled. Regulations to that end are welcomed in the abstract but not in the concrete. In a large mid-Western city the City Plan Commission recommended an ordinance to restrict building heights to 120 ft. The Board of Aldermen after public hearings and over the protest of the City Plan Commission established 150 ft. as the maximum height. Shortly thereafter the chairman of the City Plan Commission, as the architect for an owner, defended and helped to secure the passage of an ordinance for a new building 280 ft. high, although he had previously appeared in protest against the ordinance allowing 150 ft. in the same location.

Whether traffic congestion is increased more by high buildings than by the increased travel made necessary when business is transacted in smaller buildings spread over a larger area is still worthy of further discussion. Certainly the cost of transacting business over a larger area is more expensive and raises the question of whether concentrated business or traffic congestion shall control. The tremendous investments for aggregations of large buildings would appear to justify the concentration of business; the property values and concentration of travel resulting therefrom create conditions that permit expenditures for rapid transit and other expensive means of transportation that would be impossible if they had to be spread over a great area.

Boston has had a stringent law restricting building heights for many years, the result of which has been to spread the business district over a large area. Apparently this has brought into the district many automobiles that might not be used if business were transacted in a smaller area. Notwithstanding the low buildings and the enlarged business area, Boston traffic congestion is so bad that recently a new street through the business district was recommended for relief at a cost of about \$30,000,000. There is nothing in the Boston situation that would indicate that the restriction of building heights has ameliorated traffic congestion.

On the other hand, in New York City, where there has been no control of building heights, the surface traffic congestion in the districts containing the tallest buildings is no worse than in Boston. True, there is terrific crowding and congestion of the underground transit facilities, but that is because the facilities have not been provided to keep pace with the volume of traffic, by reason of a deplorable controversy between state and city authority. Engineers long ago determined on additional facilities, and New York can well afford to provide them. The annual charge on each \$100,000,000 of public money spent there amounts to only about \$1 per capita of population per year, so the end of New York's spending capacity for the improvement of local transportation is quite far off. Decentralization has been suggested

by many as one permanent solution of the traffic problem; that is, the development of a number of outlying business districts. This is apparently taking place to a greater extent than ever before in most large cities, but there is no indication that it will materially decrease the importance and expansion of the main business center, where most of the congestion troubles are experienced. Rather it appears that each additional outlying district creates new centers of congestion and raises problems which may cost more in the aggregate to solve than if more intensive remedies be applied to a centralized area. There is no doubt in my mind that decentralization will result in increasing the amount of automobile traffic between the various centers while at the same time street car travel may also be increased correspondingly. In spite of traffic congestion and in spite of the growth of outlying business centers, surveys of downtown business show conclusively that business there continues to increase. In the case of the large department stores, this is much greater even than would normally be expected.

Traffic conditions in the congested central business district can be relieved by moving out of it certain lines of business or trades that can be transacted as well or better elsewhere. Thus the writer recently recommended, after a careful survey, that the fruit and produce merchants be moved from the most congested part of the retail district at New Orleans to a much more suitable location 2 miles away. Similar results are about to be realized in Chicago by the movement of that business out of the congested Water Street district. This method may be applied to other lines of business, always, however, with the possibility that there may be a drop in property values in the old district that may or may not be recovered.

EVERY CITY SHOULD HAVE A CITY PLAN

Every city large enough to have a street railway system should have a city plan, the foundation of which, from a traffic standpoint, should be a major street plan. As the great majority of the people depend upon street cars for their transportation, the interests of these car riders should be represented by the street car company's officials taking a keen and continuing interest in the planning as it affects street car service and traffic control. The ELECTRIC RAILWAY JOURNAL of March 8, 1924, after the American Electric Railway Association meeting in St. Louis on March 4, said: "To emphasize the importance of railway men taking part in the broad planning for relief of street congestion, it may be said that while they are only indirectly interested in some of the planning, they will directly profit or suffer by the success or failure of the broad relief plan considered as a whole."

In city planning more attention should be given to the improvement of marginal streets around the edge of the congested districts so that traffic may be detoured. At present, streets leading directly into the congested districts are being widened and improved at a cost of millions of dollars, while

smaller expenditures on marginal streets would in many cases give better results. Such streets will be of particular importance in providing free routes to and from garages on the edges of such districts, thus keeping many automobiles out of the area of congestion.

In addition to providing for proper street circulation, the city plan should give attention to transit, railroad facilities, grade crossings, zoning, etc. In planning for the future it is well to keep in mind that all the needed improvements will not be made at once. Wherever cutoffs and street widening projects have been carried out, the benefits have usually exceeded the cost. While the cost for some of these improvements seems high, it does not amount to much per capita when spread over the entire community. In fact, city government is one of the cheapest benefits we possess, as it costs only from 10 to 20 cents per capita per day, and very considerable public expenditures can be undertaken without being felt very seriously.

Many palliatives have been suggested for the relief of traffic congestion. The Midyear Meeting of the American Electric Railway Association held at St. Louis on March 4, 1924, was devoted to this subject. Abstracts of the papers presented are contained in the March 8 issue of the *ELECTRIC RAILWAY JOURNAL*. It was brought out in that meeting that means should be found to secure the best use of present facilities before making large expenditures for new construction. Mr. Bartholomew, engineer of the City Plan Commission of St. Louis, said: "During the rush hour, when every available square foot of roadway ought to be devoted to movement, parked cars absorb 20 per cent of the roadway. The vehicular flow, thus restricted and confined to narrower channels, slows down to such an extent that from 50 to 100 more street cars accumulate in the district than should be there according to schedule. Two thousand vacant standing automobiles cause the street cars, carrying 75,000 or more persons home from work, to lose from 5 to 15 minutes of scheduled time."

One of the very best things that could be done to remedy this would be to stagger the hours of offices, stores and factories, but unfortunately it is difficult to do enough of this appreciably to relieve the congestion. City traffic control can help in the following ways:

1. Left turns should be prohibited as far as reasonably practicable.

2. Width of commercial vehicles should be limited to not more than 8 ft.

3. Automatic traffic signals should not be installed at intersections in congested districts, but such control should be effected by means of traffic officers. (It was thought that synchronized traffic control by automatic signals would serve well in such places, but where tried—as at Los Angeles—the results were disappointing because of the varying traffic at the different intersections.)

4. Traffic officers should be instructed to give right of way immediately to street cars when the gong rings ready to go.

5. Pedestrians should be compelled to move with the traffic and to wait for signal.

6. One-way streets should be established. (Excellent results have been secured from this in New York, Philadelphia, Boston, St. Louis, Pittsburgh, New Orleans and many other cities.)

7. Use of streets in congested districts should be prohibited to trucks and drays during rush hours.

8. Parades in congested districts should be absolutely prohibited.

9. Truck service to buildings during night hours should be encouraged, also during slack hours of the day.

10. Individual heating and power plants within the congested district should be shut down and service secured from central public utility plants removed from the congested area.

11. Building occupants who continually occupy street space for loading or unloading trucks should be compelled to use alleys or provide set-back spaces for trucks within their own buildings.

12. Where parking is permitted in the business district it is desirable to keep the automobiles off streets occupied by street cars. (A survey of all cars parked in the streets day after day may be used to ascertain the owner, his business, the necessity for his car downtown. If the car is not necessary in his business effort should be made to determine why it should not be kept at home. Good results were thus secured at Boston.)

13. Autos should be compelled to be parked within 6 in. of curb and provide not less than 5 ft. of space between parked cars to avoid delays to other traffic when getting in and out of parking place.

The movement of traffic within the congested districts is most seriously hampered today by the parked automobile and by moving automobiles that might be kept out of the district by proper planning and regulations. It is the practically unanimous opinion of all who study the problem that parking must be totally prohibited in such districts. Parking at the curb is an inheritance from the horse and wagon days and the hitching post. In those days the street widths were generally in excess of the traffic requirements, and no harm was done by such hitching. But the same streets are totally inadequate for present-day traffic that could not have been foreseen when they were laid out, and automobile parking in them causes great harm. The provision of parking space for automobiles is not a public duty and there is no equity in thus withdrawing valuable street space that is needed to expedite moving traffic.

Parking in the congested district will soon be a thing of the past. There is no justification for it. The automobile owners would never think of paying taxes, upkeep and a fair return on the value of the property occupied by standing cars. Why should they have its use free, especially when this space is imperatively demanded for more important use? There would seem to be no more equity in allowing this parking than to allow merchants to set up booths for the sale of goods in an equal area of the streets. By fore-

ing owners to store their cars at points that may be somewhat removed from their offices, fewer automobiles will be driven downtown. This will still further help other necessary traffic movement.

Where no-parking rules are enforced it should be done after and to the extent to which garage facilities are provided, and over a considerable area. Such a rule cannot be enforced on a single street within a district without upsetting the balance of trade. Automobiles will continue to be parked around the corners and on the next streets. The cleared street will be used as a thoroughfare on which there may be less local business transacted than when parking was permitted. Where the no-parking rule has been applied to a single street it has been modified later at the request of the merchants to permit parking for short periods up to one hour. This gives little permanent improvement in conditions. The curb is soon full all the time, and in fact, the movements to and from the curb interfere with and delay traffic more than all-day parking, and create dangers of collisions and accidents. A considerable part of the automobile traffic in congested districts is due to cruising around looking for parking places.

A better treatment is gradually to enlarge the no-parking area as fast as garage facilities are available. In the larger cities it will not be possible to support the most expensive property by garage rentals, and the storage will be somewhat removed from the centers of the district. In St. Louis a number of private garages have been constructed around the business district, but they are generally about five city blocks from the center. This distance and the rentals will discourage idle driving of autos downtown and confine it to those whose business demands will afford that cost. In the medium-sized cities it will be possible to locate garages and storage places at various strategic points in and around the business district to the great convenience of the drivers. Kansas City is a good example of this; there are numerous parking places which are scattered as to be convenient to every part of the district.

In smaller sized cities, where there are many one and two-story buildings in the business centers, there is no good reason why the basements or roofs of such buildings cannot be made available for auto storage by means of ramps and advance preparation. In such cities there is the same parking problem as in the larger cities, but of course over a smaller area.

Traffic outside the congested district may be expedited and simplified by separating it into classes. It is desirable where several parallel streets are available for traffic to have car tracks not more frequent than on alternate streets, the other streets to have wide smooth pavements to attract automobile traffic away from the street cars.

Where such parallel streets are not available, a study of the city plan will frequently show how sections of streets may be connected by extending them across private property and widening

them when necessary to get an adequate through street system. Streets occupied by car tracks should be paved for not less than 40 ft. between curbs where there is no through traffic, and preferably 60 ft. between curbs where there is through traffic and parking is permitted. Autos should be compelled to stop before entering or crossing streets with car tracks.

Minimum speed as well as the maximum should be specified for slow moving vehicles on certain streets. Trucks should be prohibited from certain streets where they would interfere with the free movement of street cars and other traffic.

In isolated cases where intersecting traffic is very heavy and the topography is favorable, it may be desirable to separate the grades of intersecting streets, either for street cars or all traffic. This has already been proposed for several cities. Where streets are wide enough to divide into three parts, traffic will be expedited and accidents reduced by providing a street car space between curbs in the center of the street and a roadway on each side, not less than 25 ft. wide and preferably not less than 30 ft. On Delmar Avenue, St. Louis, where the car tracks occupy a separate space curbed off in the middle of the street for about a mile, a saving of 3 minutes results in the rush hours, and accidents have been much less than where the tracks are in the open street beyond each end of the curbed space, as indicated by the following figures: 3,800 ft. in the open street to east in 5 months had 80 accidents; 5,400 ft. in the curbed space in

partment with adequate laws, funds for checking and enforcement, court backing and determination. An important feature of traffic control should be the examination of automobile drivers for age, knowledge of traffic rules, hearing and good sense before a license is issued.

It is simpler to enforce a no-parking rule than a limited-time rule. The latter requires more policing and care-

ful records of arriving and departing cars. In either case the law should provide for impounding the cars of violators, and they should be hauled to the pound just as soon as they violate the laws. Kansas City and New Orleans, in particular, have had good results from such positive enforcement of the law. Such rigid enforcement is more effective than toleration, reminders and light penalties.

The Articulated Car*

A Résumé of Existing Designs of This Type of Car for Surface Line, Rapid Transit and Railroad Service

By W. G. GOVE

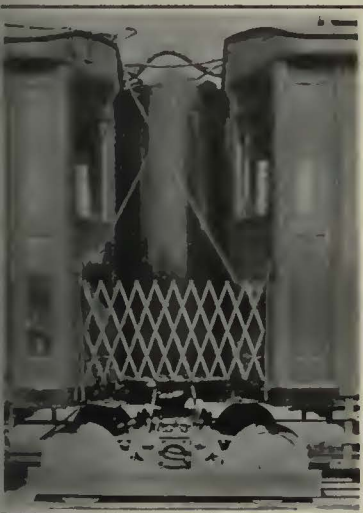
Superintendent of Equipment Brooklyn-Manhattan Transit Corporation, Brooklyn, N. Y.

THE introduction of the principle of articulating steam railway cars is said to have originated in England, the first trains being placed in service on the Great Northern Railway. There are now more than 200 sets in service. These English articulated cars range in length from two-body suburban cars to a five-body car which includes a dining section permanently incorporated in the middle of the unit. A two-body articulated sleeping car has also been introduced. In September 1924, a three-body articulated car was placed in service on the London & North Eastern Railway, consisting of a kitchen body articulated with a dining saloon body at either end. A two-body articulated car has also been introduced in the Royal Mail Service,

Steel Casting Company of St. Louis. The objective on the English roads was primarily reduction in weight and in first cost. This depends upon the number of bodies composing the car. The principal items omitted from a two-body car are one truck, two drawbars and couplers, two draft gears, two sets of buffers, two end sill constructions, various parts of brake rigging and sundry incidental items of equipment. The saving accomplished by articulating five bodies on six trucks, as in England, is said to have amounted to 20 per cent in weight and 8 per cent in first cost.

NOMENCLATURE PROPOSED

In preparing this paper I have been confronted with the difficulty of em-



Detailed View of Drum Connection on Milwaukee Articulated Car



Recent Type of Milwaukee Articulated Car, Using Drum Connection

5 months had 15 accidents; 5,000 ft. in the open street to west in 5 months had 39 accidents.

Most of the accidents in the curbed space were at street crossings. As far as possible it is a good thing to compel different kinds of traffic to follow different lanes, and in some instances this might be carried so far as physically to separate them by curbs or other devices.

The enforcement of traffic regulations requires a large police or traffic squad with persistence and determination. This enforcement of traffic regulations should be under a separate de-

partment with adequate laws, funds for checking and enforcement, court backing and determination.

All these cars were built from designs furnished by the Leeds (England) Forge Company under the British patent No. 4512 of 1907, issued to H. N. Gresley, chief engineer Great Northern Railway. On April 11, 1922, United States Patent No. 1,412,053 was issued to Mr. Gresley, who described a form of articulated car support combined with draft springs. We understand that this patent is controlled in this country by the Commonwealth

*Abstract of a paper presented before the New York Railroad Club, Nov. 21, 1924.

ploying appropriate and brief terms specially characteristic of the articulated car. For the purpose of brevity and accuracy I will use the following terms:

Articulated Car—A multiple-bodied vehicle having the adjacent ends of the bodies supported by a single truck. In this connection an articulated car having two bodies is a *duplex car*, one having three bodies is a *triplex car*, one having four bodies is a *quad car*.

The Pilot Truck is at the outer end of the car. *The Pivot Truck* is at the point of articulation. The inclosed passageway at point of articulation

when cylindrical is a *Drum*; when with an expanding canvas diaphragm, it is a *Bellows*.

At the present time the design and operation of articulated cars in the United States is in the early state of

development. Considerable progress has already been made, but the practicability of some features remain to be demonstrated under prolonged operating conditions.

The most prominent examples of

articulated cars in this country are on the following railways: The Milwaukee Electric Railway & Light Company; Department of Street Railways, city of Detroit; Brooklyn-Manhattan Transit Corporation, surface division; United Railways & Electric Company, Baltimore; Brooklyn-Manhattan Transit Corporation, subway division.

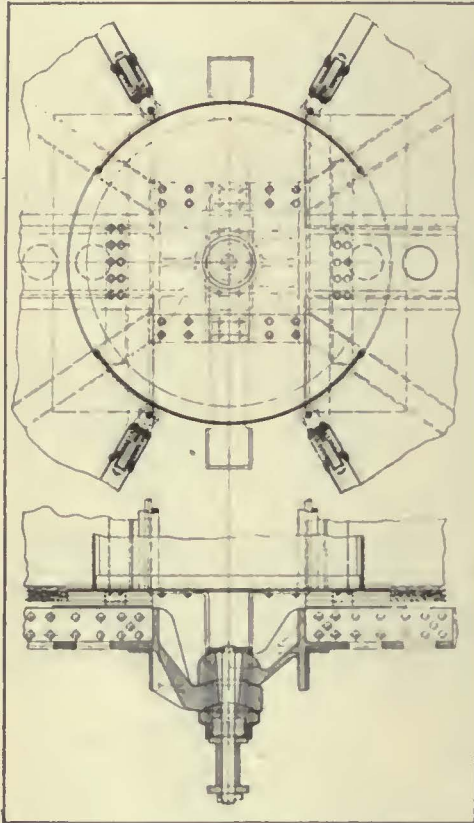
The Milwaukee Electric Railway is now engaged in a rebuilding program which will ultimately couple 384 bodies into 192 cars. Of these there are now in service 103 articulated cars of two bodies each, connected at the point of articulation by a weathertight passageway mounted on the pivot truck. On the first articulated cars in Milwaukee the passageways were of the bellows type, while the latest cars are fitted with steel drums. The pivot truck is an idler and each of the two pilot trucks has two motors. The cars are arranged for double-end operation. Each platform controller is connected with a full set of resistance on its own body of the car, thus reducing the number of wires carried from body to body across the pivot truck. [This car was described in the issue of *ELECTRIC RAILWAY JOURNAL* for Jan. 15, 1921, page 131.—Eds.]

The Department of Street Railways, city of Detroit has in operation an articulated car giving excellent service on the most congested route in the city. The car is composed of three center-entrance, center-exit steel bodies mounted on four trucks and arranged for single-end operation. The pilot trucks are fitted with motors, the pivot trucks are idlers. The distribution of the weight is such that 56 per cent of the total weight without passengers is on the driving wheels. [This car was described in the issue of *ELECTRIC RAILWAY JOURNAL* for arch 8, 1924, page 357.—Eds.]

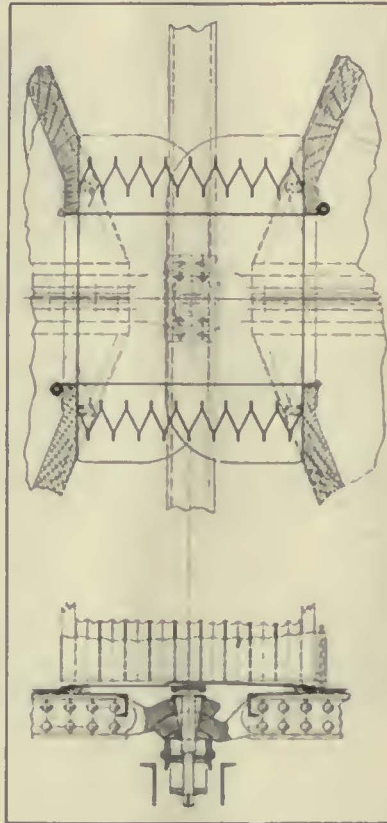
In February, 1924, the Brooklyn-Manhattan Transit Corporation placed in service a two-body, three-truck articulated car. This vehicle, known on the road as the "duplex car," was constructed from the bodies of two cars which had been in service for some years. The bodies are connected by a drum of ample size to permit of a clear passage while the car is operating on the shortest radius curve. The over-all length of the car is 63 ft. 10 in., with seats for 71 passengers. The standing room will accommodate about 100 more passengers under rush-hour conditions. [This car was described in the *ELECTRIC RAILWAY JOURNAL* for Feb. 16, 1924, page 252.—Eds.]

THE BALTIMORE CAR

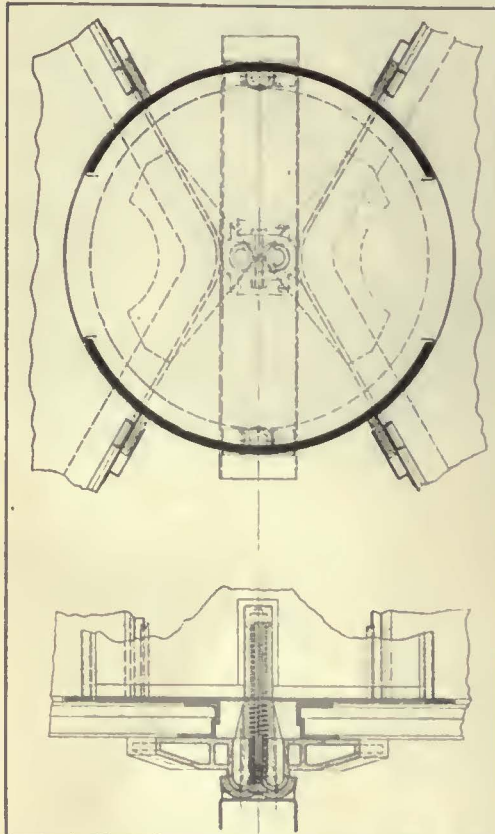
The United Railways & Electric Company of Baltimore has recently placed in service a two-body articulated car formed from two standard semi-convertibles. It is fitted for double-end operation with four motors. The over-all length is 74 ft. 8 in. The total weight of the car without passenger load is 67,800 lb. The total seating capacity is 87 and there is standing space for 78 passengers. The passageway between cars is of the drum type. The



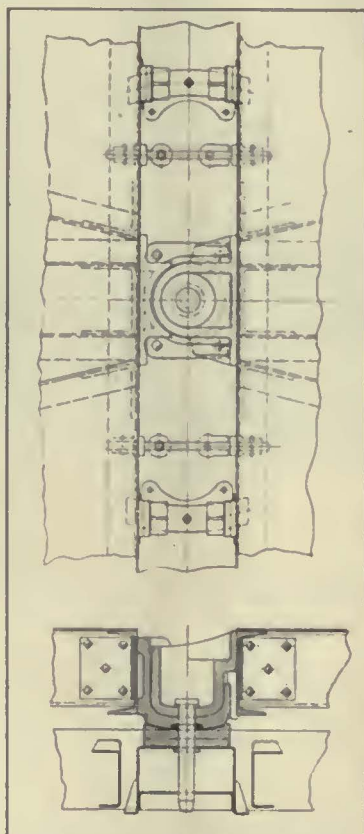
Brooklyn Duplex Car for Surface Operation



Milwaukee Duplex Car for Surface Operation



Detroit Municipal Triplex Car
Details of Connections and Passageways for Articulation in the Principal Designs



London & North-Eastern Car



The Center-Exit Door Is Retained in the Baltimore Car Immediately to the Rear of the Center Drum

body by way of a junction box supported on the top of the drum. Nine more articulated cars are to be built once by this road.

BROOKLYN CAR FOR RAPID TRANSIT SERVICE

Constantly increasing density of traffic has led the New York Rapid Transit Company to place an order with the Pressed Steel Car Company for four cars, each consisting of three articulated body sections, for service in the subway. The bodies and trucks closely conform in design to those in use on this system. The three bodies will be mounted on four trucks, with an over-all length of 137 ft. The unit has seats for 160 passengers and a total capacity of 550. The total weight light is 175,000 lb., or about 1,100 lb. per seated passenger. This compares with the weight of 1,230 lb. per seated passenger of the single body type of cars in this same service.

A drum type passageway connects the bodies, affording opportunity for free circulation of passengers. These cars are equipped for operation in rain and are fitted with wide doors at their ends. The overhang is reduced to permit free passage between cars throughout the train even on the shortest radius curves of the system.

Each car is fitted on each side with six doors, each opening 4 ft. in the clear. The conductor operates all doors from his position at the rear of the car. When two such cars are coupled together one trainman operates the doors of both cars from his position at their adjacent ends.

The two trucks at the outer ends are fitted with motors, and the two intermediate pivot trucks are idlers. The equipment is also distributed to balance the weight on the trucks to the greatest advantage, the two air compressors being located on the intermediate section and a multiple-unit control equipment located near each motor truck. The hand brake and foundation brake rigging is all placed on the end sections.

The bodies and trucks are being built by the Pressed Steel Car Company. The air brake equipment will be furnished by the Westinghouse Traction Brake Company and will include the latest form of empty and load brake which automatically adjusts the brake shoe pressure and the current input to the motors to correspond with the total weight of the passengers in the car.

Two of the four cars will be equipped with motors, control and air compressors made by the General Electric Company; the other two cars will have corresponding equipment furnished by the Westinghouse Electric & Manufacturing Company. Other items of equipment will also be furnished by competing manufacturers to determine by actual equivalent service the comparative operating reliability of their respective products.

ADVANTAGES EXPECTED

It is confidently expected that when fully developed the system of car articulation will result in a number of desirable improvements in the operating characteristics of passenger cars either in subway, surface or interurban or steam suburban service. The hoped for improvements may be briefly outlined as follows:

Comfort of Passengers.—It is claimed for articulated cars in service both in Europe and this country that there is a notable improvement in their riding qualities, the lateral motion or side rolling of the body having practically disappeared. This is accounted for by the fact that the articulated car body is supported at its extreme end where it rests on the bolster of the pivot truck and consequently has no overhang. As

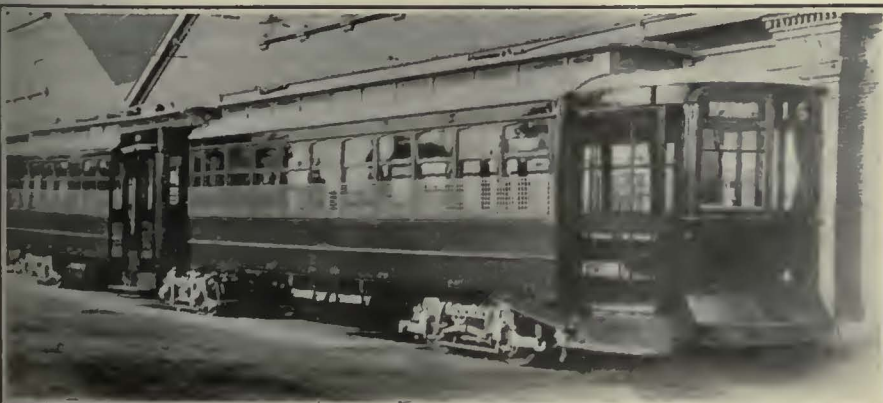


Details of Articulation Connections, London & North-Eastern Car

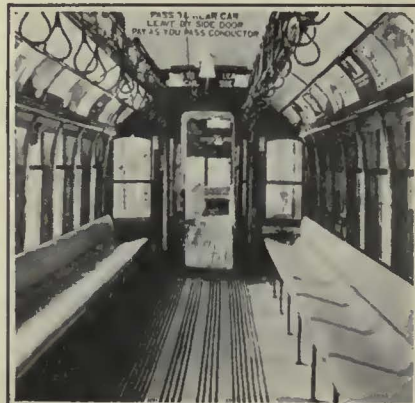
the articulated ends of the bodies are in close contact, there can be no slack between bodies, and consequently the cars start and stop smoothly. The passageway between the articulated bodies provides at all times for free and safe movement of passengers throughout the car. This passageway is also weather-proof and draftproof.

Noise.—One of the most disagreeable features of rapid transit subway service is noise, which is a composite of many sounds emanating from the wheels and other moving parts of the trucks, motors, gears and gear cases, as well as drawbars, safety gates and other connections between cars. These sounds are echoed and merged into an almost intolerable racket or roar by the walls of the subway or tunnel. The use of articulated cars will reduce the number of trucks, eliminate drawbars and safety gates and in consequence the noise of operation of such cars should be considerably less than a coupled train of single cars.

Reduction in First Cost.—The articulated units should cost less per passenger than the equivalent capacity of single cars. When forming articulated cars by rebuilding bodies of existing equipment, the salvaged material, consisting of trucks, motors, controllers and other parts of equipment, amounts to a considerable item either when returned to stock or applied to the equipment of new cars.



Type of Articulated Car Developed in Baltimore for Surface Operation



Interior of Baltimore Car, Showing Continuous Passageway Through the Drum

Reduction in Weight.—The greatest saving in weight will of course be realized when cars and trucks are specially designed for articulation and when every feature is given careful consideration from the point of view of economy in weight combined with reliability of service.

Reduction in Operating Cost.—There will be a direct saving in cost of energy required to operate the lighter cars with fewer trucks, a direct saving of labor in the inspection and maintenance

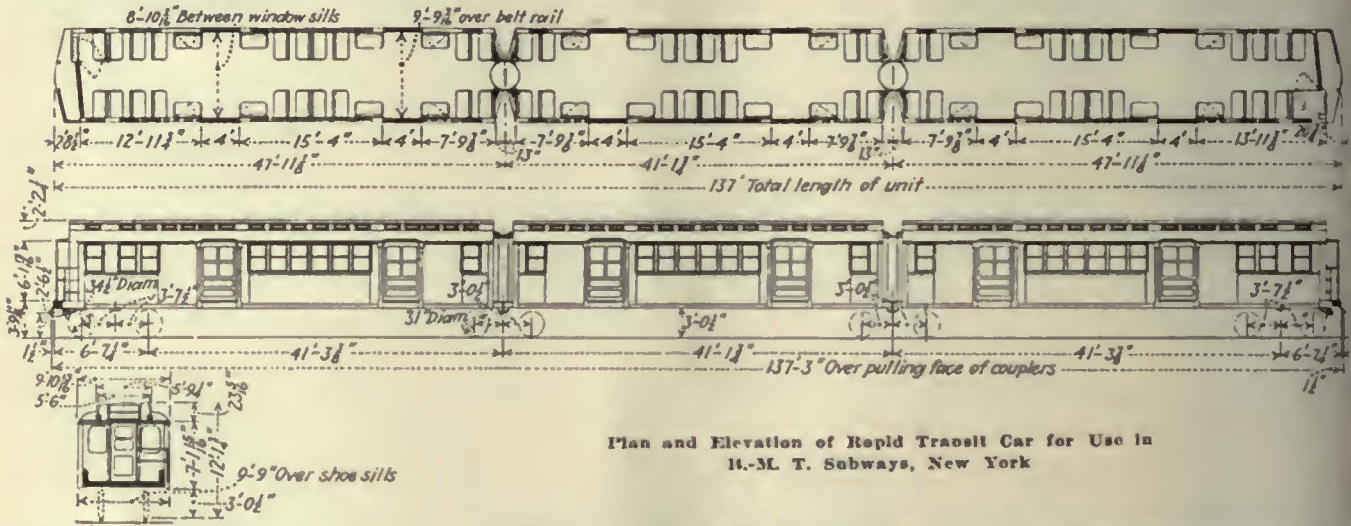
bearings for the pivot truck will require careful attention to provide for the proper support of the pivoted ends of the bodies and at the same time permit of the necessary freedom of each body to conform to the canting caused by the elevation of the outer rail on curves, change of grade and all the various combinations of these factors. The method of support must be such that there will be no tendency to produce torsion in the bolster of the pivot truck.

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Plan and Elevation of Rapid Transit Car for Use in N. M. T. Subways, New York

nance of the consolidated units and also a reduction in the platform expense. These savings will vary according to the extent of the consolidation.

FEATURES OF DESIGN

The items of cars and truck construction involved in the system of articulation can only be briefly referred to in this paper. The function of the members is the same in most of the cars, though the details of design may vary in accordance with specific requirements of clearance, door arrangement, etc.

Bolsters.—In the first articulated cars in England the outer trucks were of the usual type, but the single truck was fitted with two bolsters, the theory being that the two bodies in passing over uneven track and around curves would have a tendency to rock independently of each other and would therefore have to be supported on separate bolsters fitted with separate side bearings. Actual experience disclosed that, under the conditions prevailing, the rolling movement was actually so slight that a truck with a single bolster could be used.

Center Plate Design.—The design used on the English cars is such that the center plate load of one body is carried on the upper surface of the center plate of the adjoining body, the lower surface of which engages the center plate of the truck. The early designs in this country followed this arrangement. More recent designs arrange for twin car body center plates, each with a separate bearing on a common truck center plate casting. This latter arrangement provides a better opportunity for lubrication and for disengaging the articulated bodies from the pivot truck when in the shop.

Side Bearings.—The design of side

Vestibule Design.—The articulated cars in England operate on comparatively long radius curves and consequently the flexible vestibule connections consist of accordion-like diaphragms with the edges in some cases permanently attached to the respective bodies, while in other cases the diaphragms are fitted with face plates.

In the United States the development of the articulated unit was first applied to surface cars operating on short radius curves. This has led to various forms of passageways having semi-cylindrical side walls mounted on top of the pivot truck and maintaining free communication between the bodies even when on curves of the shortest radius. These cylinders are of steel, usually with the walls lined with a temperature insulating material. The space between the cylinders and the car bodies is fitted with rollers or other devices to provide weathertight joints. The top head of the cylinder is formed to shed water and the inside of the bottom head forms the floor of the passageway.

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Mass Transport Is Cure for Parking Evil

THE National Highway Traffic Association met on Dec. 2 in New York City to consider better uses for the streets. Prof. Arthur H. Blanchard of the University of Michigan was re-elected president of the association. Traffic congestion has reached such a point, it was said, that highway authorities are now worried about minimum speed rather than maximum. The problem now is to find ways to make the speed of the stream of vehicles higher so as to facilitate movement and get greater use of the highways.

Several speakers suggested that mass transportation was the principal remedy for the parking problem. This was urged by C. M. McCreery, vice-president Six-Wheel Company, Philadelphia. He believed there would be practically a revolution in mass transportation if the parking evil was eliminated. Faster schedules could be made, more and better transportation supplied. The thing to do, he said, was to keep the private automobiles out of congested areas. To make this possible street cars and buses must provide fast, comfortable, flexible and safe service.

Prof. Roger L. Morrison, in his

Banker Urges Caution in Customer Ownership Financing

paper, while favoring greater use of street cars, buses, taxis, or other forms of public transportation as one method of solving the parking problem, called attention to the effect of stops at the curb. On streets where parking is not allowed, he would not permit any stops of either public service or private vehicles. If necessary, buses could be rerouted, he said, to keep them off the restricted streets.

A vehicle has no right to stop anyway, it was held by several speakers. Fundamentally the highways are for passage, and vehicles may be stopped to let off or take on passengers, or to park for various times, only at the sufferance of the public, through the legal authorities.

Ernest P. Goodrich favored a 30-second parking ordinance. He said this would prevent parking but would permit momentary stops to take on or let off passengers.

In an address on methods of forecasting future traffic and the saturation point in the utilization of motor vehicles, Mr. Goodrich told of studies made by the Russell Sage Foundation in its monumental investigation of the future of New York City and its environs. Figures collected from all over the country indicate that the number of automobiles is rapidly approaching a saturation point. In the future, residential sections of cities should be laid out with main thoroughfares about 6,000 ft. apart. On these, street cars and buses would be operated alternately. That is, the trolley and bus should work on alternate thoroughfares. The Russell Sage studies have also shown that there is an economic limit to the amount of traffic carried on any one street for the benefit of the community. Vehicular and pedestrian movement may become so dense that it would be better economy to build other streets, instead of trying to provide more space on the ones crowded. With increase in the number of lanes of traffic, even where these lanes are separated by a parkway or a line, the efficiency falls off. From the center toward the outside each successive lane carries less traffic at a given time, so the effective width of a thoroughfare is definitely limited.

Professor Blanchard, in discussing state fees for motor common carriers, said that these should consist of two parts: first, a charge based on the wear of the highways due to such carriers; second, a charge based on the direct cost of regulation.

New England Motor Transport Conference

A CONFERENCE of those engaged in or dependent on the transportation business of New England has been called under the auspices of the National Automobile Chamber of Commerce. It will be held on Dec. 8 and 9 at the Copley Plaza Hotel, Boston, Mass. Morning and afternoon sessions will be held each day beginning at 10:30 a.m. and 2 p.m.

The problem of highway transportation in New England, both freight and passenger, will be discussed, as will co-ordination of highway transportation with other forms.

SPEAKING before the New Jersey Public Utilities Association at its convention in Atlantic City this week, Ralph S. Child of Bonbright & Company, New York, indicated the enormous magnitude of the funds now required annually to finance extensions and improvements in the public utility field. For the first 9 months of 1924, \$1,181,434,112 of new corporate issues were brought out by power, gas and railway utilities. This is 42 per cent of the total issues for all new corporate securities. The amount for the full year in 1923 was \$1,138,396,000; in 1922, \$980,433,000; in 1921, \$671,085,000, and in 1920, \$496,822,000.

He spoke also of the now general practice of issuing "open end" mortgages with additions against new construction.

Perhaps the principal point of interest to electric railway men was Mr. Child's comment about customer ownership financing, as follows:

"I would like to dwell upon the question of 'Customer Ownership.' This method of financing has been so generally taken up by public utility companies, and has almost universally been so successful that it appears to some in the investment banking business that there are certain elements of danger which may be lost sight of.

"This success has perhaps led the managements of some companies to the conclusion that selling stock is one of the easiest things in the world to do. Statistics on customer ownership sales show that the great majority of sales are made to people of small or moderate means who have had little or no previous experience in the matter of investment. They are sold, as a rule, through the personal contact of some employee of the public utility company and on the strength of a 6½ or 7 per cent return, and because of the ease with which the stock may be purchased on the partial payment plan. These buyers of stock know little about earnings statements or balance sheets—little about property values, rate of return, or margin of safety. In fact, many companies, in their customer ownership campaigns, never show an earnings statement, the meaning of it not being understood by the average stock purchaser. The customer generally becomes a stockholder or partner in the business through sales persuasion and the fact that the investment is a local one, and that the local banker speaks well of it.

"It goes without saying that the investment banker, interested in the senior securities of public utilities, has been most favorably impressed with the development of customer ownership. Naturally the placing of this equity back of the senior securities improves just that much the position of the senior securities that the banker has marketed to the public. This may be looked upon as a selfish viewpoint on the part of the investment banker. However, it may be said that with a broad view of the public utility business, the investment banker recognizes

in the customer ownership movement something of value beyond that of added equity. He sees the growing list of customers who are partners in the business making for improved public relations for the utility. He sees that this experience in investment may well develop among these customers habits of thrift which can be of national benefit, and he sees an improved understanding on the part of utility employees of the problems of their company in the conduct of its business and of the importance of their company's position in the economic life of their community. These factors mean a great deal and are looked upon by the investment banker as elements that will give added strength to the position of public utilities in the coming years.

"The banker also sees certain other angles to the question of customer ownership which from his viewpoint are equally important, though perhaps not held quite so clearly in mind by the public utility companies themselves.

"It is generally recognized that there is a definite responsibility upon a public utility to give good service. However, the responsibility assumed by the company when, through its own employee organization and its own representations, it sells stock in its enterprise to its customers, is of quite another character. That utility company has invited its customers to become partners in its business and has taken on a definite responsibility which cannot be shirked or evaded, if through a succession of circumstances something should occur to impair the value of the investment and make necessary dividend cessation.

"Obviously, in the sale of senior securities there are safeguards, such as a mortgage lien on the property and a claim on earnings prior to dividends, which are not enjoyed by the investor in preferred stock. It is vitally necessary to the continuance of the strong position of the public utility industry that there be no failure in the payment of dividends on the part of any company which has sold preferred stock to its customers. Should such a failure occur it would reflect on the entire industry and might bring about complications which would be very far-reaching and possibly have disastrous results.

"It might be added that it has been noticeable in some quarters that in view of the readiness with which stock has been sold to customers by almost every public utility company which has undertaken this kind of financing, the public utility managements have naturally been much pleased with themselves. They have perhaps not taken sufficiently into consideration that the success of their initial campaign was due to a considerable extent to the fact that the people sold were new investors, who as a rule put in money out of earnings instead of out of surplus funds, and that the employee organization entered into this work with energy and enthusiasm because it was a new and unusual job, one in which the spirit of competition and personal accomplishment counted for much."

Maintenance of Equipment

Keeping Fire Doors Free and Clear

IN THE Wheaton shops of the Chicago, Aurora & Elgin Railroad sheet steel screens have been made so that the operation of fire doors cannot be impeded by material care-



Sheet Steel, Reinforced Shield Protects the Fire Door from Materials and Equipment Which Might Render It Inoperative

lessly placed against them. A shield of $\frac{1}{8}$ -in. steel, reinforced at the edges and corners and braced by means of $1\frac{1}{2}$ -in. x $\frac{1}{4}$ -in. steel, is set up around the fire door in its open position. This shield is 3 ft. high

and long enough completely to protect the door. The offset at one end is fastened to the brick wall by means of expansion bolts, while the other end is fastened to the floor and braced at the top by means of a $1\frac{1}{2}$ -in. x $\frac{1}{4}$ -in. steel bar. It is painted black and gives a very neat appearance to the shop as well as being an efficient means of preventing materials and equipment being piled against the fire door.

Paving Old Track in Private Right-of-Way

UNTIL recently the tracks of the Boston Elevated Railway on Bright Road, Belmont, were in a reserved strip in the center of the roadway. A short time ago, however, it was desired by the municipality to pave the street, including the track area. The existing construction of the railway was with 70-lb. T-rail with bolted joints. Wood ties and rock ballast were used. The track structure was in good shape and it was felt that it was unnecessary to take it up or rebuild it when paving the streets. For this reason the company simply re-tamped the ballast and tightened up the joints. The latter was accomplished by driving wedges between the rail end and spot welding them in position.

Concrete was then poured inside and outside of the rail right up to

the level of the rail head. Flange-ways were made by means of an arch-shaped wooden form placed between the rails while the concrete was soft and moved lengthwise of the track. In this way the desire of the municipality to have the entire street paved was accomplished without the necessity of expensive track reconstruction by the railway.

Jack for Brake Cylinder Mounting

BY R. S. NEAL

Assistant Superintendent of Equipment
Kansas City Railways

WHEN it is desired to change the brake cylinder on a car for any reason such as repairing or overhauling of the old cylinder, these

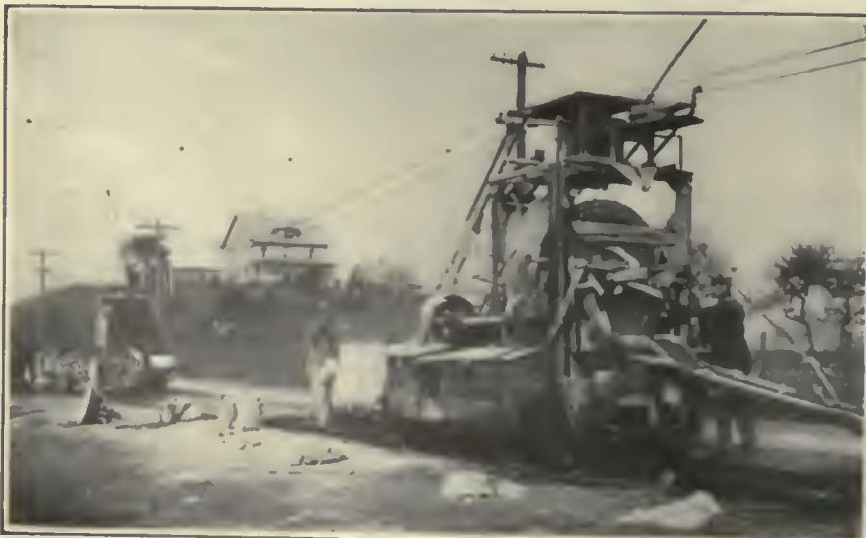


Brake Cylinders Are Mounted or Removed Conveniently and Safely by Means of This Simple Device Constructed in the Shops of the Kansas City Railways

heavy castings are found to be hard for even two men to handle. Even then it becomes necessary to block the cylinder up into place while it is being fastened to its supports. All this takes considerable time, makes it a difficult physical task, and in addition introduces an accident hazard.

In the shops of the Kansas City Railways a simple and inexpensive jack has been designed and constructed for holding brake cylinders in position while they are being either removed or replaced on a car.

This jack is shown in the accompanying illustration. It is simply a trestle with a false top which can be either raised or lowered by means



Laying a Concrete Pavement Along Tracks Which Used to Be on Private Right-of-Way

of an ordinary car jack. The false top is guided in its movement by strap-iron guides on the ends.

The 10-in. and 12-in. brake cylinders which are being installed on all cars of the Kansas City Railways weigh 200 lb. and 300 lb. respectively, and this jack has been found to be very convenient for the use of workmen when installing these cylinders.

Armature Tongs Speed Up Handling

MANY methods and devices have been developed in various railway shops for handling armatures from place to place. The specially designed pair of tongs which was developed by the mechanical department of the Twin City Rapid Transit Company has proved to be an unusually efficient tool for this purpose.



These Tongs Have Proved Very Useful for Handling Armatures About the Twin City Rapid Transit Company's Shop

These tongs are arranged so that they are simply dropped over the armature, and when raised by the two short lengths of chain and the ring above grasp the armature securely between the two curved jaws.

It is evident that an armature can be picked up from any position on the floor by means of this device, without the necessity of passing a band under the core, as is the customary method. When the armature is to be placed down on a bench or in a machine, the tongs are released as soon as they are relieved of the weight.

In order to keep the jaws open when the tongs are suspended without a load, a small hook is provided



At Left, Old Coupling Head Which Protruded Beyond the End of the Car. At Right, the New Coupling Bar Does Not Extend Beyond the Bumper

on the suspension ring shown at the ends of the two short sections of chain. This hook drops under the center joint and holds the jaws apart until the operator is ready to pick up an armature. By this arrangement the tongs are readily manipulated on a hoist or crane by one man, when moving armatures from place to place in the shop.

Coupling Modification Reduces Accident Hazard

WHEN a change in the laws of the state of Massachusetts permitted the Eastern Massachusetts Street Railway to remove the old-fashioned fenders from its cars the change left the coupling heads pro-

truding at the ends of the car in a way that was not only unsightly but also dangerous. A number of accidents occurred on account of these protruding couplings striking pedestrians on the street. To eliminate this danger the railway decided to remove the shackling blocks and use a shortened coupling bar which is entirely underneath the car platform, as shown in an accompanying illustration.

Each car carries two old coupling heads permanently held together by a short bar. They are loosely connected to allow freedom of movement. Cars are coupled by putting this piece between the two drawbars and dropping pins in place to take the tension. Two cars thus coupled are shown in one of the illustrations.



Coupler Composed of Two Coupling Heads and a Bar in Position Between Two Cars

New Equipment Available

Electric Treadle-Controlled Doors

TO MEET the demand for automatic control of exit doors by use of a treadle, the Consolidated Car Heating Company, Albany, N.Y., has developed a mechanism for controlling the operation of the door engines electrically. Standard elec-



Depressing the Treadle Automatically Opens the Exit Doors, Which Continue Open Until the Passenger Is Off the Step

tro-pneumatic control features have been applied to the treadle, the construction of which is greatly simplified through use of electro-magnetic valves. With this construction the treadle pan can be made very shallow, so that it can be set in a platform with the ordinary type of flooring construction without the need for extensive modifications.

In regular operation the treadle pan is held in its raised position level with the platform floor by springs. A passenger stepping onto the treadle presses it and forces the plunger of the electric door switch down so as to make contact; this energizes the magnet valve, admitting air to the door engine, so as to open the doors and lower the steps. The lowering of the step actuates another electric control switch, which closes a circuit in parallel with the magnet valve. The doors will then remain open as long as the step is held in its lowered position, even though weight is removed from the treadle, so it returns

to its normal position. As soon as the passenger leaves the step, this is raised slightly by spring pressure and the electric switch opens the door engine circuit, so that the doors are closed and the step is raised. The closing motion is delayed sufficiently so that after the passenger has left the step there is plenty of time for him to get clear of the car before the door starts to close.

The accompanying illustration shows the treadle mechanism on a one-man, two-man car. In this case, the pair of folding doors next to the car body is used for exit. With one-man operation the treadle mechanism provides automatic control of the exit doors, while with two-man operation, both the entrance and exit doors are controlled by the conductor from his operating station.

Edgewound Resistor

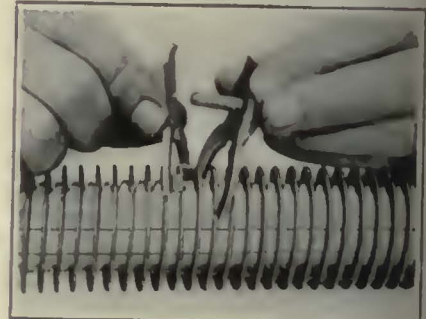
A RIBBON-TYPE resistor, wound on edge, has recently been developed by the Monitor Controller Company, Baltimore, Md. The resistor unit consists of a high-resistance alloy ribbon wound in helical form and mounted on a steel-reinforced porcelain support which passes through the unit. This method of construction relieves the resistor ribbon from mechanical strain and permits of thorough ventilation. The ribbon can operate at any temperature up to red heat without sagging.

A system of terminals and taps enables a unit to be connected into a circuit and to be interconnected with other units. Two simple forms of clamps are provided. One is a bridging clamp which makes mechanical connection between two adjacent units and serves as a terminal when the units are connected in parallel. The other may be used as a terminal clamp or as a tap.

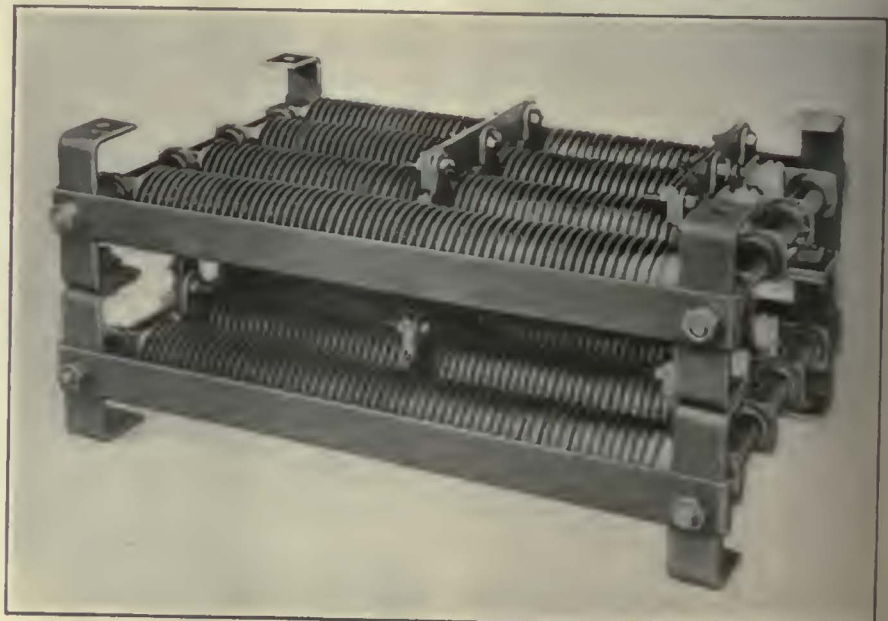
Monitor edgewound resistors are made in standard units and mounted in frames so that they can be employed like the usual cast-iron grids for use with car motors or wherever heavy currents are handled.



Clamp for Connecting Adjacent Units Serves as Terminal When Units Are in Parallel



Clamp for Taking Off Tap



Bank of Eight Units with Standard Method of Mounting

The News of the Industry

Favorable Move at Chicago City and Companies Appear Now to Be Closer to Agreement on Some Points

The city of Chicago has receded from its previous position and has arranged to get a list of disinterested engineers to evaluate the surface lines, and possibly the elevated lines, with a view to purchase at the valuation price. The city did not commit itself to a deal, but the bankers went on record as recommending to traction security holders the acceptance of the city's notes, known as Schwartz certificates, in exchange for traction securities should the city buy.

Frank O. Wetmore of the First National Bank, who attended the semi-public traction conference of Dec. 2, stated to the committee of Aldermen that the bankers could not sanction a recession from the capital account value of the surface lines of \$162,000,000, unless experts appraised the lines at less. With him were John J. Mitchell of the Illinois Merchants' Bank and Melvin A. Craylor of the First Trust & Savings Bank. Leonard A. Busby, head of the south side lines of the Chicago Surface Lines, also was present.

The city had offered slightly more than \$142,000,000 prior to the conference. The appraisal was consented to with the provision that if agreement was made for a sale, the price should not exceed \$162,000,000 regardless of any excess in the evaluation. This the bankers said was satisfactory. Alderman Fick was ordered to get city and traction lawyers together to agree on three engineers from a list submitted by R. F. Kelker, Jr., city traction expert. Mr. Busby declared a satisfactory evaluation could be arrived at within six weeks from a list containing every item of surface lines equipment which is on the records of the Board of Superintending Engineers. The city, however, agreed to stand the expense of an appraisal.

Six public hearings beginning Dec. 5 were ordered with a view to getting the demands of each section of the city on record regarding the transportation facilities afforded each of the six zones in the city's traction plan.

Wages Cut in Bloomington, Decatur and Danville

Simultaneously with the wage reduction in Peoria, Ill., from a maximum of 57 cents an hour to 50 cents the wages in Bloomington, Decatur and Danville, Ill., were reduced a proportional amount. As these wage scales are based on the Peoria scale, the high rate in Bloomington was lowered from 50 cents to 47 cents and in Danville and Decatur from 51 to 49 cents an hour.

As explained in the ELECTRIC RAILWAY JOURNAL for Sept. 21, page 461, with the expiration of the contract

between the Illinois Power & Light Corporation and the railway men in Peoria on May 1, the company entered into negotiations with the men for a new agreement. After conferences between the local manager at Peoria and a committee of employees, at which a satisfactory wage scale could not be agreed upon, it was decided to submit the question to an arbitration board of three members for decision. It required 90 days before the arbitrator for the company and the one for the men could agree upon the third mem-

ber. Following another period of 30 days, during which time every phase of a "living" wage was considered, the board recommended a reduced wage scale. This recommendation was set for hearing on Sept. 15 and the wage reduction adopted as of Oct. 1. The new wage scale was not made retroactive to May 1, the time of expiration of the contract, but took effect on Oct. 1. During the period of negotiation and arbitration the railway men received the former rate of pay. The new agreement expires on May 1, 1925.

Investigator Becomes the Investigated

Tables Turned on Mayor Hylan, New York, Who Sought Partisan Arraignment of Commission—Grave Political Consequences Are Seen Ahead

TONGUES have been set to wagging again in New York over the transit situation. More traction letters are being written and they are attracting more attention than did the previous correspondence, that between Mayor Hylan and G. M. Dahl, chairman of the board of the Brooklyn-Manhattan Transit Corporation. It is not a matter of the vivacity of the correspondence, but rather the personalities of the participants and the seeming deep significance of the possible future political aspects of the matter. The participants are Mayor Hylan and Governor Smith.

In this connection a little local history may not be amiss for the especial benefit of those outside of New York not acquainted with the recent local political events. Governor Smith, a Democrat, was recently re-elected to office by a big vote. He was the only one of his party on the State ticket so put into office. Back of him are a Republican Assembly and a Republican Senate. Mayor Hylan, a political anachronism and a Hearst partisan, gunning for the scalps of the members of the New York Transit Commission, filed charges with the Governor against the commission alleging dereliction of duty and misconduct in office. He demanded that the commissioners be removed from office. It was really a pre-election backfire which the Mayor started.

Mark the celerity with which the removals might be accomplished—if the Governor was willing! There's the rub. All the Governor had to do or all that Hylan undoubtedly thought he would do would be to constitute himself a judge, summon the commissioners before him, question them and then if he saw fit dismiss them. The Governor pondered the matter for two weeks. At least, he didn't reply to the Mayor for that period. When he did, the answer he gave was one that startled the Mayor and set all New York to talking. Instead of following

the procedure demanded by the Mayor the Governor named Justice McAvoy, another Democrat, as special commissioner to sit as referee with almost unlimited powers and "report the actual facts regarding the transit situation." He indicated that with that information before him he would determine how to proceed. That flabbergasted the Mayor. He then threatened not to play. More of that later. In naming Justice McAvoy, the Governor said:

The transit problem in New York City has become a matter of sharp controversy between the city administration and the Transit Commission. Charges against the commission have been made by the Board of Estimate and filed with me. Other charges against the city administration made by the Transit Commission have appeared in the public press. The problem is acute. The present intolerable conditions must be remedied at the earliest possible moment. The people must have the facts.

It appears, according to Mr. Hylan, that the Governor completely misunderstood him. He says that neither he nor the Board of Estimate has requested "an investigation of anything." They are "substantial, formal charges" against the commission that the Mayor has filed. He has said so himself. Of them a trial was requested. At the end of a letter which took almost two solid columns of newspaper space, the Mayor says the Smith plan "neither has my approval nor will it have my participation, save to the extent required by law." He pretends to see ahead "an investigation from which nothing can come except reports and no decision." He wants in place of the present transit commissioners, of whom two are Democrats and one a Republican, "a commission free from present or former railroad or utility affiliation." He concluded:

When news of your appointment of Judge McAvoy first came to me I assumed that he was named to hear and try the charges and I welcomed such appointment. I now understand from your reported statement that such is not the fact and he is only an investigator, and apparently I misapprehended the scope of the appointment.

Governor Smith was quick to reply. Best of all he did so in just 176 words.

The kick is all in the last 35 words. To the Governor it was quite clear that "the welfare of the people requires complete investigation to ascertain and report all the facts." Then came the 35 words, deeply significant in their portent. Arranged as the Governor put them they follow:

I am confident that upon reconsideration you will change your decision to participate in the investigation only to the extent required by law and conclude to co-operate with Justice McAvoy fully in the public interest.

On Dec. 5 the Mayor declared that he still believed that a general inquiry by a Moreland act Commissioner was not the proper procedure and that the proper way would have been to proceed under the Public Service Commission act so that proof of the charges against the commissioners might have been presented properly.

It is expected that Judge McAvoy will begin the inquiry as quickly as possible. It was said that he probably would begin to hold public hearings for the taking of testimony in the Aldermanic Chamber at City Hall immediately after the adjournment of the Appellate Division for the holiday period and would continue the hearings through the holidays.

As for the Transit Commission it is reported to be ready and waiting to lay all the cards on the table before an impartial judge. Big doings and more interesting reading about the seven years of delay during the Hylan hierarchy appear to be ahead.

George Van Slyke, who writes politics for the *Sun* and is regarded as being unusually well informed on his specialty, said in the *Sun* for Dec. 3 that Mayor Hylan by his repudiation of the transit investigation by the Governor "has brought Tammany Hall to the verge of the greatest political warfare New York has experienced since the historic battle between Charles F. Murphy and Mayor McClellan 20 years ago." Mr. Van Slyke said in part:

The Hylan bolt has shaken Tammany Hall from cellar to attic, but the leaders appear to be standing together today in their demand that Smith go through with the investigation regardless of the outcome. Not the slightest doubt was entertained anywhere that such a clash could mean only a knockdown fight between the Smith-Tammany and the Hylan-Hearst factions.

The Mayor will not risk losing his pet issue by submitting it to the test of an impartial investigation. His plan of action is made clear. He seeks to buttress his position by ousting the Transit Commission, getting control of a new commission and putting through his own scheme of transit with a city owned and operated line and extensive bus routes.

The Mayor is fighting with his back to the wall. He is desperate, and even his political enemies are crediting him with displaying real courage in risking an open fight with Tammany on uneven terms. Should the split come it will mean the alignment of Tammany Hall and its allies in the several boroughs on the Governor's side, and Hearst, Copeland and a remnant of the Democratic organization in Brooklyn, Queens and Richmond on the Mayor's. The test would come probably in the primaries, when Hylan would appear for renomination against a candidate picked by Smith and Tammany.

Hearings on New York Central's Electrification Projects

The Public Service Commission of New York has fixed Dec. 15 for a hearing on the application of the New York Central Railroad for approval of equipment and location to bring about the necessary electrification of its road

other than the west side tracks, in New York City, as required by the Kaufman law of 1923. The hearing will take place at 30 Church Street.

Proceedings for the electrification of the company's freight lines on the west side of New York are now under way before the commission, which has authority over changes which may be necessary to street grades in New York City prior to the approval by the commission of the electrification plans.

The hearings scheduled for Dec. 15 are on the proposed electrification of the Putnam division of the New York Central, from Sedgwick Avenue, the Bronx, to Getty Square, Yonkers, and the Port Morris branch on the Harlem division.

On Dec. 16, at 30 Church Street, New York City, the commission will conduct a hearing on the petition of the New York Connecting Railroad Company for the electrification of its tracks within the city of New York from Bowery Bay Junction on Long Island to Fresh Pond Junction.

Madison Railways Must Have More Income for Improvements

Dudley Montgomery, vice-president of the Madison Railways, Madison, Wis., at a recent meeting in the office of the Railroad Commission made it clear that more income must be derived in order to carry out the program of improvements, and that the only source of revenue was the street car fare. The prospective improvements were outlined in the *ELECTRIC RAILWAY JOURNAL*, issue of Oct. 25, 1924. Company officials declared that they had not decided on any fixed increase in fares, but all were satisfied that the recent audit of its books made by Harry H. Wilson, accountant of the commission, confirmed the need for more income to insure further development of the system.

Officials of the company volunteered the information that the employees had not been fairly treated on the wage question during the past 10 years, not because the company did not realize that they were entitled to higher pay but that with the present income it was impossible to pay any more. Several years ago the men accepted a reduction of 3 cents an hour after it had been explained to them that a cut was necessary if the system was to be kept in operation. Officials of the company are now anxious to grant an increase to the men. The average salary paid to the employees is \$135 a month. Men are not paid for their days off and they are not allowed vacations with pay.

To carry out the physical improvements called for in the plan would cost approximately \$700,000. The program is to be spread over a period of 7 years and the major portion of the expense is to come out of the company's revenues. The audit of the railroad commission for the year ended Aug. 31 last showed a net income of \$36,934 before providing for depreciation. A large amount of the net income must be used to pay off loans which have been made in order to carry on improvement work, and according to the company officials practically only \$7,000 would be left for the program as outlined.

Various types of fares were discussed

at the meeting. Officials of the company informed the committee that three-fifths of the income of the company was derived from cash fares and two-fifths from the sale of tickets. The company now sells nine tickets for 50 cents. The cash fare is 6 cents.

Foreign Bus Lines Entering Detroit to Be Regulated

Action is to be taken by the city of Detroit to regulate the increasing number of bus lines entering the city. Steps looking toward this end were first advocated by John W. Reid, Commissioner of Public Works. Interest in the matter on the part of city officials was aroused by the announcement that the Detroit United Railway would transfer interurban passengers at the city limits to buses which will be operated to downtown Detroit in place of the interurban cars. The idea of the railway is that the buses can make better time inside the city than can the interurbans. A hearing is to be held on the matter.

The D. U. R. already operates a bus line from its downtown station to Trenton and several bus lines are operated from points downtown to suburban cities. Temporary revocable permits were issued to these operators by the Detroit Police Department. It is the opinion of John C. Lodge, president of the City Council, that the city must regulate these buses and be properly compensated for the use of the pavements.

The withdrawal of the D. U. R.'s interurban cars from the city will result in a loss of revenue to the Street Railway Department as the railway now pays the City Department rental for the use of the municipal tracks. It is proposed by Mr. Lodge that a tax be considered by the Council, similar to that one required from companies operating buses within the city. One cent per bus-mile is collected by the city from the Detroit Motor Bus Company. This tax is considered as part compensation for the wear and tear on the city pavements. It is levied against other bus companies operating in the city.

The fixing of routes for the buses is also to be considered.

Accidents Reported

No fewer than four accidents have been reported within the past few days from various parts of the country. On Nov. 30 six persons were injured in a fire in a one-man car of the Public Service Railway at Kearny, N. J. The following day 18 persons were hurt when a bus of the same company was overturned through the recklessness of the driver of a private automobile. On Dec. 4, as a result of a collision between a one-car train of the Sacramento Short Line and a three-car Key Route System train in Oakland, six persons are reported dead and seven probably fatally injured. The day before that five people were burned to death in a fire which followed a collision between a two-car interurban train and a motor truck in Wyandotte, Mich., the truck being loaded with turpentine which took fire.

Jitney Candidate Defeated at Springfield

Fordis C. Parker, Republican, was elected Mayor of Springfield, Mass., on Dec. 2 by 925 votes over Robert W. King, Democrat, with Josiah Dearborn, Independent, and Richard J. Talbot, Jitney candidate, weakly trailing. The vote was as follows: Parker, 9,691; King, 8,766; Dearborn, 3,780; Talbot, 1,583. It was an exciting contest, and Parker's victory was clinched only by the last three precincts reporting. The vote, 26,935, nearly doubled that of any preceding city election. Mr. King, a young lawyer, made a most remarkable bid for the office.

The election is of special interest because all four candidates had committed themselves on the transportation subject, particularly with respect to the future place of the bus in the city. As a matter of fact, one of the candidates, as explained in the *ELECTRIC RAILWAY JOURNAL* for Nov. 15, page 857, is counsel for the jitney men led out of Springfield last May by Mayor Leonard.

Mr. Parker, the successful candidate, takes the stand that the first duty of the city is toward the street railway. Previous to his nomination he said that if he were elected it was his idea to appoint an expert to look into the transportation situation, but that he would favor a return of the jitneys only if it were shown that the Springfield Street Railway did not appear disposed to do all it could to furnish such service.

Co-ordination Talk Continued in Chicago

Universal transfer negotiations are going forward between the Chicago Surface Lines and the elevated roads. Samuel Insull, chairman of the board of the Chicago Rapid Transit Company, announced this fact to the City Council committee on local transportation. Like Henry A. Blair, head of the Surface Lines, Mr. Insull has submitted himself to questioning in an effort to help the city frame a traction policy.

Mr. Insull joined in Mr. Blair's contention that co-ordination of the lines is necessary, but he differed from Mr. Blair as to the extent. The universal transfer negotiations are a definite step toward his idea of co-ordination. It is expected the companies will soon announce whether they can make the plan practicable from a financial standpoint.

The scheme embraces 136 points where passengers would be permitted to transfer between elevated trains and surface cars. Whether this can be accomplished with a single fare or whether a transfer charge or a higher rate of fare would be necessary are points for the experts to determine.

Mr. Insull took occasion to rebuke the city for not acting on his request for authority to build \$23,000,000 of extensions in outlying and crosstown districts and to lengthen platforms in the loop district so as to accommodate 8-car trains. He said he had ordered 100 subway-type cars costing \$2,300,000 for delivery next fall. This will permit a 5 per cent increase in loop service.

If the city builds a subway, Mr. Insull will increase rush-hour service from 1,200 to 2,400 cars an hour. He said private companies will give the city all the transportation it needs if the city will cease its dilatory consideration of petitions. As to city ownership of lines, he said: "Take away the incentive for profit and you lose efficiency."

It was Mr. Insull's first appearance in seven years before a body of this kind and he did not lose the opportunity to demand fair treatment from the city. He objected especially to Mayor Dever's reiterated statement that the elevated lines cannot get the money for extensions. Mr. Insull said:

"Credit is like a woman's reputation; a whisper and it's gone. Quit talking and give us the authority and you will get rapid transit enough in a hurry."

3,000,000 Messages Distributed in Philadelphia

Three "Read as You Ride" Service Talks were distributed during the week ended Nov. 22 on the cars of the Philadelphia Rapid Transit Company, each for a period of two days. Each approached the 1,000,000 mark in distribution. Dash signs were used in



Dash Sign Used in Philadelphia

calling attention to the message. They were entitled "Better Wages, Better Service," "Your Fare and Others" and "Why No Fare Boxes." In each case the admonition was added: "Ask for Service Talks."

Railway Preferred to Bus in Eastview, Ont.

The ratepayers of Eastview, Ont., voted on Dec. 1 in favor of granting a franchise to the Ottawa Electric Railway by a majority of 247 over that in favor of granting a franchise to the Eastview Transit Company for the operation of buses. The railway has offered to lay the tracks for a distance of 1½ miles without cost to the town and to charge a fare of 10 tickets for 25 cents to city limits. It was agreed that if the city of Ottawa at any time purchased the company's lines the town of Eastview would be given the opportunity to purchase at the same terms and for the actual cost of the line within the town limits. The Eastview Transit Company offered to run four buses from ½ mile east of the town limits to the Ottawa main post office, 2½ miles, at a 5-cent fare and a 10-cent rate on Sundays. The bus and railway tangle in Eastview has been referred to previously.

New Agreement in Dallas Expected

The present arrangements between the city of Dallas, Tex., and the Dallas Railway whereby a 6-cent fare is charged in the city will expire on Dec. 27. Unless a new agreement is made and authorized by a city ordinance the fare will automatically return to 5 cents as specified in the city charter. It is expected that an application for a continuance of the 6-cent fare will be filed shortly by the company.

The present 6-cent fare was extended for 18 months from June 27, 1923, on condition that the railway spend \$705,915 in extensions, rebuilding and repairs and in the purchase of 30 additional cars during that period. This proposal made by the City Commission is known as the Everman Plan No. 2. The agreement constituted an understanding between the city officials and the traction company and was negotiated by John W. Everman, supervisor of public utilities for the city. At the time the extension was authorized it was agreed that the improvements and extensions would not be required until after the completion of improvements in the Everman Plan No. 1 of 1922, which gave the company eight months for completion of the program.

The railway extensions that may be projected now as a commitment on the part of the company for the increased fare have not been made public, but have been under discussion. When the agreement expires on Dec. 27 the railway is to take over operation of the Trinity Heights line from the Texas Electric Railway under the franchise agreement.

One-Man Operation Started in Cleveland—Arrests Made

One-man car operation on important lines in Cleveland, Ohio, during non-rush hours was started by the Cleveland Railway on Dec. 1. It was followed immediately by arrests of the operators by authorities in the city of Cleveland, Lakewood and Newburgh Heights, who invoked police ordinances forbidding running of street cars with fewer than two men. During the first two days of operation twelve of the operators were arrested, but the Cleveland Railway insisted that one-man operation would be thoroughly tried. The hearings for those arrested are to be held within the next two weeks. The city ordinances prescribed penalties of fines ranging from \$5 to \$25 for each violation.

Railway men insist that one-man car operation was started as an economic measure because not sufficient funds are allowed for two-man operation on lines that are losing money. Secretary Wilson said that if operation of one-man cars interfered with or impaired service, they would be discontinued.

An interesting feature of the arrest of the operators lies in the fact that if any of them are fined, the fines will be paid by the railway out of the pockets of the car riders, because under the Cleveland arrangement, any money made by the company over and above the 6 per cent paid to stockholders goes into a fund to reduce or increase fares.

Aldermen Act Against One-Man Cars in New Haven

Primarily for the purpose, it seems, of determining the extent of the jurisdiction of the city of New Haven, Conn., over the railways operating within its limits, an ordinance to this effect was passed by the Aldermen on the evening of Dec. 1, which would ban the use of one-man cars. Up to Dec. 3 the measure had not been approved by the Mayor. It is pretended that the purpose of the ordinance is "to prevent accidents in the streets of the city and the highway district of New Haven, facilitate traffic therein and preserve good order and secure the safety of persons using the city streets."

In passing the act the Aldermen proceeded on the advice of Assistant Corporation Counsel Thomas R. Robinson.

The intention of the Connecticut Company is to appeal to the State Public Utilities Commission for relief from the terms of the measure if the Mayor signs the ordinance. Its contention is that the city has no such power as it is now seeking to wield.

This is not the first time that a similar issue has been raised in Connecticut. Last January the Council of Hartford passed an ordinance against the use of one-man cars in which the time limit was fixed at July 15. When the expiration date rolled around a resolution was passed giving the company permission to continue one-man cars until it received a month's notice to withdraw them. It was pretended at the time by the city that the ouster measure was involved with a tax measure then pending determination by the courts.

The position of the railway in that case was the same as it has taken in connection with the New Haven matter, namely, that the Public Utilities Commission has jurisdiction.

Suit to Reduce Nashville Fare Fails

Chancellor John R. Aust recently dismissed the bill filed in Chancery Court by a citizen in which it was sought to enjoin the Nashville Railway & Light Company, Nashville, Tenn., from charging a 7-cent fare. In dismissing the bill the chancellor said that reliance was put solely on a city ordinance which fixed the fare at 5 cents, but no reference had been made to the act of the General Assembly creating the Utility Commission, nor did the complaint raise the question of the validity of that act.

The opinion further stated that the railway rested its defense upon the order of the commission which, after a full hearing, permitted the railway to charge and receive a 7-cent fare; that the commission's order must stand unless the ordinance of the city is superior to the legislative act, or the act is contrary to the constitution of the state or of the United States. Chancellor Aust said that it would be an anomaly if the city could deprive the people from exercising jurisdiction through a legislative body.

He referred to the situation in Memphis, where the order of the commission

there permitting a 7-cent fare had the effect of overriding and of superseding an ordinance of that city fixing the fare at 5 cents.

New Franchise Proposed at St. Louis

A new franchise from the city of St. Louis to cover a period of 50 years is proposed in the interest of the successor company to the United Railways. Mayor Kiel wants the franchise bill to go through as initiated by the people. He apparently doesn't want the responsibility of accepting a franchise for the city. As Mr. Kiel is a tentative candidate for re-election to a fourth term as Mayor his attitude is regarded as most important. The Mayor and fourteen Aldermen come up for re-election in April. Fourteen other Aldermen and President Walter Neun of the board hold over for two more years.

The new franchise will provide for service at cost and a co-ordinated bus and railway line. Provision will also be made for the subway system the city contemplates building. The railway is expected to agree to use the subways on a leasing arrangement, the city to furnish the capital to build them if present plans are consummated. The city is making a survey to ascertain the best means of solving its rapid transit needs. A special aldermanic committee has recommended the expenditure of \$100,000,000 for a subway system in the congestion sections of the city.

The city under the new franchise measure would have direct representation on the board of directors of the railway and it is very probable that a plan for a gradual purchase of the system by the city will be worked out.

A special election on the franchise together with the cost of conducting an educational campaign would probably run the bill to \$100,000. It is regarded as imperative to vote on the bill on a day different from the one on which officials are elected to public office in order to keep the element of politics out of the election. In any event it would probably be impossible to prepare the franchise measure in time for submission at the Spring election. While the various financial interests have accepted the plan for the reorganization of the railway many steps remain to be taken before the franchise can be acted upon. The present franchises expire in about 15 years.

The program of the reorganization committee provides for full, open and public discussion of all questions involved in the new franchise.

Bus Fares in Michigan Advanced —Accounting System Likely

The Michigan Public Utilities Commission recently authorized a temporary fare increase of half a cent per passenger-mile on buses operated between Detroit and Pontiac by the Star Motor Coach Company, between Detroit and Mount Clemens by the Wolverine Motor Bus Company and on the electric cars of the Detroit United Railway's Pontiac and Mount Clemens divisions. The new rates went into effect on Dec. 1. They represent half of what

the three companies asked in their cent petition. It is said that the 1 cent mileage rate just instituted was makeshift order because of lack of evidence submitted at the recent hearing. It is expected that the commission will order the bus companies to install a system of accounting more complete with respect to details so as to enable the regulatory body to learn exactly how much loss or profit per passenger-mile is being encountered.

Promptly following the decision the commission fixing the temporary rate of fare the Detroit United Railway announced its plans for the co-ordination of bus and rail service wherever possible. The trolley and bus service between Detroit and Pontiac will be co-ordinated. The rail fare will be a straight fare at the rate allowed while the bus fare will be in increments of cents. The minimum rail fare is 10 cents and that on the buses 10 cents. The Detroit United is now charging 1 cent a mile on its Pontiac and Mount Clemens Division and has a petition before the commission for authority to charge 2 cents a mile.

Elliott G. Stevenson, president of the Detroit United Railway, recently stated in connection with the proposed fare advances for Mount Clemens and Detroit that the business rivalry between the railway and the interurban bus lines had led to a service very much in excess of that warranted by the combined volume of business, and at a rate of fare wholly inadequate to meet the costs of doing business. He said that the result had been a severe financial loss to both railway and bus operators. This, he said, had been particularly emphasized in the deterioration of bus equipment, most of which would have to be replaced.

Philadelphia Rapid Transit to Participate in Terminal Plan

Plans have been made for conference between the Pennsylvania Railroad and Philadelphia Rapid Transit Company officials regarding the inclusion of elevated and other transit lines in the new railroad station. The intention is to remove the road's station to the west bank of the Schuylkill. This plan involves the initial expenditure of \$4,000,000 by the Pennsylvania Railroad and \$12,000,000 by the city.

In this connection the Philadelphia *North American* has revived the story about plans for electrification of the principal divisions of the Pennsylvania Railroad. It says that the work will be started as soon as business conditions develop to a point where the financing of the giant project can be properly handled. It is probable that with the beginning of the work on the proposed new railroad terminus on the west bank of the Schuylkill River the railroad will institute the necessary preparations for the electrification of its lines between New York and Washington and across the Allegheny Mountains. The first step on the New York and Maryland divisions will be the use of electricity between this city and Wilmington, to be followed rapidly by the transformation of the line between New York and Bristol.

Rules Governing Bus Operation Tightened

The Public Service Commission of New York has issued an order providing for certain safety equipment on buses after Jan. 1, 1925. The order reads as follows:

The commission being of the opinion that public safety requires that gas tanks on buses operated on stage routes, bus lines and motor vehicle lines shall be located outside the body of said buses, and that an emergency exit is necessary on certain types of buses, it is

Ordered that no person or corporation owning or operating a stage route, bus line or motor vehicle line under a certificate from this commission, granted pursuant to the provisions of the transportation corporation law shall, on or after Jan. 1, 1925, operate motor buses, unless said buses shall be equipped in accordance with the following requirements:

1. The gasoline tank shall be located entirely outside the body of the bus with an inlet for filling which shall permit filling from the outside exclusively.

2. In those buses having longitudinal seats or a longitudinal aisle between seats, in which there is a common exit and entrance, there shall be provided an emergency exit door located at the opposite end of the bus body from the regularly used entrance and exit, which emergency door shall be securely fastened in a manner which will prevent it being opened except when opened for emergency purposes.

The Public Service Commission has also prepared a set of rules applicable to operators of buses throughout the State of New York. The commission in 1922 required that all persons or corporations operating bus lines should adopt regulations for the guidance of employees, but the new rules of the commission provide for uniformity throughout the state.

Rules have been promulgated by the commission covering every phase of the employees' duty, divided under four general heads—general, personal appearance and conduct, garage rules and operation. Disregard of orders, violation of rules or neglect of duty will always be considered a sufficient cause for dismissal or discipline.

Emphasis is placed on the rule that all buses must be brought to a dead stop before crossing a railroad.

Buses must be operated under a schedule and under no conditions pass schedule points ahead of time; in case of delay operators may not make up lost time by reckless driving.

It is provided that operators before leaving the garage or when relieving another must inspect the motor bus to determine the amount of gasoline in the tank, amount of oil in the engine case, amount of water in the radiator, condition of fare box and tell-tale, condition of service brake, condition of emergency brake, condition of lights, cleanliness of interior of bus, and presence of fire extinguisher. A record of such inspections must be kept on a daily inspection card provided for that purpose. All defects observed must be immediately reported.

Another rule provides that the maximum standing passenger load must not exceed 35 per cent of the seating capacity. Running lights must always be displayed at least 15 minutes before sunset and at such other times as existing conditions may require. In concluding the order says:

The safety of the passengers must at all times be the first consideration. Employees must exercise constant care to prevent

injury to persons and property and in all cases of doubt must take the safe course.

In case of accident injured persons must not be left until arrangements have been made for proper care, and verbal and written reports of every accident must be made by the operator.

Copies of these rules will be mailed to all bus lines as soon as printed.

Subway Draft Under Way in Philadelphia

City Solicitor Gaffney of Philadelphia announced on Dec. 1 that the draft of an agreement between the city and the Philadelphia Rapid Transit Company for the building of the Broad Street subway would be submitted to the Mayor's Transit Commission before the Christmas holidays. It was made clear that under the terms of the loan bill through which funds for both projects were made available, \$10,000,000 is definitely set aside for the Chestnut Street subway, while \$67,000,000 is just as specifically allocated to the Broad Street line.

In the proposition submitted to the city several weeks ago by railway officials the company undertook to pay the interest and sinking-fund charges on a \$50,000,000 50-year loan for the construction of the Chestnut Street subway. If work were begun at once, it was pointed out, the tube would be completed and ready for operation sooner, perhaps, than the Broad Street subway, which is scheduled to open late in 1928.

The proposition was placed in the hands of the Transit Commission by the Mayor and in turn the City Solicitor, the Transit Director, and Mr. Swaab were delegated to consider the drafting of an agreement which the city might present to the company.

Engineers Expected to Report Soon in Los Angeles

The comprehensive report of Major R. F. Kelker, Jr., outlining a complete rapid transit system for metropolitan Los Angeles, is scheduled to be filed with the Board of Public Utilities about Jan. 1. It is also expected that about the same time the board and the State Railroad Commission will receive the report of Richard Sachse and Chief Engineer J. O. Marsh, covering the proposed merger of the electric lines. A statement made by one of the commissioners said:

Major Kelker's report will embody a practical working plan under which there will be no need of waiting for the city to vote a \$100,000,000 bond issue in order to carry out the program. A rapid transit system will be recommended which can be established in units, and a financial program will be submitted so the city can begin at once on the system as soon as the plans have been approved by the proper authorities.

The report of the special engineering committee will recommend the formation of a holding company to operate the two lines until municipal ownership is an accomplished fact. If this is not found practical at the earliest possible moment, both Engineer Sachse and his associates are said to favor the purchase of the Pacific Electric metropolitan lines by the Los Angeles Railway.

Sixty-three Buses Wanted by Kansas City Receivers

The receivers of the Kansas City Railways, Kansas City, Mo., favor the purchase of 40 single-deck, 18 double-deck and 5 de luxe buses for use in service supplementary to the railway lines. Action to this effect was recommended in a report filed on Nov. 29 with Judge Kimbrough Stone. Judge Stone is asked to permit the purchase and service providing the railway obtains protection against bus competition from the city administration.

The report to Judge Stone is signed by Francis M. Wilson and Fred W. Fleming, the receivers. Its presentation follows a series of public hearings. Ten routes are recommended as follows:

Four main lines in Kansas City, Mo.
One parlor car line in Kansas City, Mo.
Three cross-town, or feeder, lines in Kansas City, Mo.
Two cross-town, or feeder lines in Kansas City, Kans.

A 10-cent fare would be charged on all lines except the parlor car line, on which a 25-cent fare would be required.

Transfers from cross-town lines to street cars would be permitted. Transfers from street cars to cross-town lines would be permitted with the payment of an additional 3-cent fare. No transfers to or from main line buses would be permitted.

Judge Stone has instructed the receivers to negotiate at once with the city to secure franchises that would protect its proposed investment in buses. When these reach a point where the court considers such an order justified it is expected that the receivers will be instructed to buy buses and begin service.

Will Suspend Auto Parking Agitation.—The subject of the degree at which automobiles shall be parked in the business district of Oklahoma City, Okla., is to be allowed to rest indefinitely, according to announcement of the Retailers' Association after a conference with John W. Shartel, president of the Oklahoma Railway. The merchants prefer 45-deg. parking as it permits more automobiles to park in the business district. The company prefers parallel parking as it reduces automobile monopoly of the company's rails to a minimum. The rule at present in effect is for 20-deg. parking, which Mr. Shartel says is a very substantial benefit to the company and the public using its cars, traffic having been speeded up materially and accidents substantially reduced in number since this rule became effective.

Jitney Lines Attacked.—Citation has been issued by the Alabama Public Service Commission, naming as respondents 32 individuals in Huntsville, and four bus and taxi lines in Gadsden, Attalla and Alabama City, requiring them to show cause why they should not be required to discontinue operation of jitney service for alleged failure to comply with the laws of the state. Under the Alabama law, when a jitney or motor vehicle is operated in competition with a railway, application to operate such jitney must be made to the Alabama Public Service Commission for a certificate of convenience and necessity.

Nine-Cent Fare in Effect.—The Des Moines City Railway, Des Moines, Iowa, instituted a 9-cent cash fare with a ticket rate of 8.5 cents Nov. 30. The rate for children, school children and owl car service is unchanged. F. C. Chambers, general manager of the company, reported that the stabilizing fund of the company, which was to be maintained at \$150,000, had not only fallen below the \$100,000 mark, which automatically brought a fare readjustment, but that it had been depleted, and that to meet operating expenses, fixed charges and taxes a loan of \$25,459 had been incurred.

Acquires Bus Lines.—The Columbus, Newark & Zanesville Electric Railway, Springfield, Ohio, has acquired the bus lines operating in the city of Newark for \$40,000 and will continue their operation with new equipment and universal transfer privileges on a 6-cent fare. The City Council recently passed an ordinance granting a 25-year franchise to the company. It was vetoed by the Mayor and passed over his veto on Nov. 17.

Bus Operation for Lockport.—The International Railway and its subsidiary, the International Bus Corporation of Buffalo, N. Y., have informed the City Council of Lockport that they will apply for a franchise to operate buses in Lockport as part of a new interurban bus line service from Buffalo, Lockport and Olcott Beach. A committee has been appointed by the Lockport Mayor and Board of Commerce to confer with President Tulley of the railway on the proposed bus line.

Granted Fare Increase.—Fare charged by the Chickasha Street Railway, Chickasha, Okla., was increased from 7 cents to 8 cent effective Dec. 1 in accordance with permission granted by the State Corporation Commission following a hearing Nov. 26. The application for the increase was not opposed, the company's request having been indorsed by the Chamber of Commerce and the City Council. The Chickasha Gas & Electric Company, co-operating to keep the electric railway operating, has granted a substantial reduction in the price of power to operate the line.

Seeks Higher Fare.—The Manchester Street Railway, Manchester, N. H., announced on Nov. 22 that it would seek permission to increase cash fares from 8 to 10 cents. If granted, the increase will become effective Jan. 1. General Manager J. Brodie Smith claims that during the last six months the company has operated at an average loss of \$10,710 a month. Ten months of this year, ending Oct. 31, show a loss of 1,093,646 passengers compared to the same period for 1923.

Will Accept Bus Lines.—The proposal of the Quincy Street Railway, Quincy, Ill., to substitute bus lines on State and South Eighth Streets for the car tracks will be accepted by the municipal authorities as a solution of the repaving problem which has been in contention between the traction line and the city. The railway has 3 miles of track on South Eighth and State Streets and to tear up the present lines, relay and repave would cost \$120,000. The com-

pany, however, has agreed to pave between its tracks on lines on Chestnut Street from Eighteenth Street to Twenty-eighth Street. Ralph F. Carley, western division manager for the Illinois Light & Power Company, represented the public utilities in the conferences.

Ordinance Against One-Man Cars Unlawful.—Efforts on the part of the City Council of Buffalo to prohibit the operation of one-man cars on local lines of the International Railway are opposed by the city law department, which has handed down a decision saying such an ordinance would be unlawful. It was proposed to provide a penalty for violation of the proposed ordinance of fines of \$100 to \$250 for each offense. A ruling by the Public Service Commission on the operation of one-man cars in Buffalo is expected within the next week.

Alton Company Seeks Franchise.—The Alton, Granite City & St. Louis Traction Company, which charges a city fare of 10 cents in Alton, Ill., has proposed to the Alton City Council a reduction in fare in return for a 20-year franchise to operate on Broadway, Alton. The Broadway line has been operating without a franchise for some time. The Council has passed several new franchise bills which the company has declined to accept because of the special taxation provisions of the measures. The franchise proposal was made in the name of the receiver of the railway.

New Company to Operate Buses.—The Spartanburg Bus Company, a subsidiary of the South Carolina Gas & Electric Company, Spartanburg, S. C., has been granted a charter. Officers of the company are, R. L. Peterman, general manager of the Baratow interests in South Carolina; vice-president, J. H. Axtell, assistant general manager of the South Carolina Gas & Electric Company, and secretary and treasurer, A. S. Jolly, treasurer of the South Carolina Gas & Electric Company. The company is to be financed by the W. S. Barstow Management Association.

Will Operate One Man Cars.—Directors of the Fitchburg & Leominster Street Railway have decided to put one-man cars into operation on the company's line between Fitchburg and Ayer, Mass. President Wesley W. Sargent in disclosing the plan said the change was made to economize during the winter when traffic was light. The change will mean a considerable cut in expenses. This is the fifth line of the company to change two-man to one-man type of car.

Fight for Lower Rates.—The beach cities served by the Pacific Electric Railway have started action to bring about the improvement of interurban railway service from Los Angeles to Redondo, Venice, Ocean Park, Santa Monica and Alhambra. The cities at the same time demand a tariff reduction of approximately 40 per cent. A committee of fifteen has been appointed composed of representatives from all the cities affected. The petition, it is expected, will be filed with the State Railroad Commission by the end of this month.

Foreign News

Mexican Railway Being Electrified

Electrification of the branch line of the Mexican Railway between Esperanza, Puebla and Orizaba, Veracruz, a distance of 29 miles, is now in progress. The contract was secured by an American company, but the actual construction work is being done by the Mexican Railway under the supervision of American electrical engineers. The work is up-grade from 4.7 to 5.25 per cent.

The overhead construction will cost approximately \$250,000; the substation \$250,000, and 10 electric locomotives \$1,250,000. The substation will be equipped to convert a 42,000-volt, 60 cycle, three-phase, high-tension alternating current into a 3,000-volt direct current. Power will be furnished by the Puebla Electric & Power Company, Tuxpan.

New Electric Railway for Guatemala.—A contract for construction of an electric railway from Santa Maria to Quezaltenango, Guatemala, and a power plant at Santa Maria has been signed by the Secretary of Finance and Public Credit of Guatemala. The work will be done by the Allgemeine Elektrizitäts Gesellschaft of Berlin. Bond to the value of \$3,000,000 will be issued by the government to finance the work.

Croydon Tramways to Be Reorganized.—Croydon Town Council, England, is planning to reorganize the municipal tramway system, in an effort to meet bus competition. Being only a few miles from London, the Croydon tramways are subject to severe competition of buses owned by private companies. Bids have been asked for 30 additional street cars.

Speed of London Tramcars.—The average speed of the London County Council tramways is 9½ m.p.h., including stops, according to a report made at a recent meeting of the Council. This is said to be the highest average speed on any street lines in Great Britain, comparing with 7.57 m.p.h. in Glasgow, 8.5 in Birmingham, 7.87 in Manchester and 8 in Liverpool.

London Officer Resigns.—Ivor Fraser, publicity manager of London underground electric railway companies, has resigned that office in order to become manager of the *Morning Post*, London. A. L. Barber, commercial manager of the companies, will for the time carry on also the duties of publicity manager.

Equipment Contract Let for Australian Electrification.—A contract has been secured by the Metropolitan Vickers Electrical Company, Manchester, England, to furnish electrical equipment for 150 motor coaches and 150 trail cars to be used on the Sydney Australia, suburban railways which are being electrified. The price is about \$500,000. The equipment for each motor coach includes two 350-hp., 1,500-volt motors with electro-pneumatic control. The overhead contact system will be employed.

Financial and Corporate

\$3,986,059 Net in Brooklyn

First Annual Statement of Successor to Brooklyn Rapid Transit Reflects Great Increase in Traffic

A net income of \$3,986,059 is shown in the first annual report of the Brooklyn-Manhattan Transit Corporation, Brooklyn, N. Y., for the year ended June 30, 1924. This is after the deduction of interest, rentals and accruals to minority interest. After allowing for preferred stock dividends paid during the year the company earned \$3.23 a share on the 769,911 shares of no par common stock. The consolidated statement shows that there were paid for the fiscal year ending June 30, 1924, two quarterly dividends on the outstanding preferred stock of the Brooklyn-Manhattan Transit Corporation, aggregating \$748,404. No other dividends were paid on the B.-M. T. stock or any dividends declared by any of the operating companies during the fiscal year. The figures in the consolidated statement include the result of operation of the Brooklyn Heights railroad, still in receivership.

The report gives a condensed summary of the results of operation under the contract with the city for the year ending June 30, 1924, and also for the seven-year period from the commencement of the contract, namely, Aug. 4, 1913, to June 30, 1924. Referring to these figures the report states that they indicate the extent to which, both for the year just closed and the period from the commencement of the contract, the operations of the rapid transit lines under the contract of the city on a five-cent fare have failed to earn the stipulated return of interest and sinking funds of the company's and the city's contribution to the construction and equipment of the new line.

The contract with the city provides that the revenues derived by the company from the operation of the city-owned and the company-owned rapid transit lines are to be pooled and from such pooled earnings certain deductions are to be made in the order specified, the balance being divided between the city and the company in equal parts. The contract provides that the com-

pany is to receive out of the pooled earnings the stipulated interest and sinking fund on its investment before the deductions are made in favor of the city. The deductions stipulated in the contract are, in condensed form, and in the order of priority, as follows:

- (1) Operating deductions, including rentals, taxes, operating expenses, maintenance and depreciation;
- (2) The company's first preferential of \$3,500,000, representing the average annual income for 1911 and 1912 from the operation of the company-owned rapid transit lines contributed to the pooled system, out of which the company must pay interest on its capital investment in such rapid transit lines;
- (3) The company's second preferential of interest and sinking fund on its contribution to the cost of construction and equipment of the new lines and on cost of reconstructing and adding to existing lines;
- (4) The city's preferential of interest and sinking fund on its contribution to the cost of constructing the new lines.

Each of these deductions is to be made in the order given and deficits in any period are to be cumulative and paid out of subsequent earnings before any deductions are made on succeeding items.

The relative volume of traffic handled on the rapid transit lines and street surface lines of the company is shown by the number of passengers carried for the year ended June 30, 1924, namely, on the rapid transit lines 539,069,076 and on the street surface lines 266,421,409. The great increase during the past seven years in traffic handled was shown in the report. In 1924 805,490,480 passengers were carried on both the surface and rapid transit lines compared with 520,969,604 in 1918. On the matter of traffic the report states that the problem is that of providing adequate facilities to handle the tremendous increase which is bound to result in the future under the limitations and restrictions imposed under the contract with the city.

In submitting the first annual statement of the company to the stockholders G. M. Dahl, chairman of the board of directors, gives the historical facts in connection with the organization of the property and the contract of the rapid transit lines with the city. He said that the city of New York had \$150,000,000 invested in the subway and elevated lines leased to the New York Rapid Transit Corporation, which was

STATEMENT OF EARNINGS AND EXPENSES FOR YEAR ENDED JUNE 30, 1924, BROOKLYN-MANHATTAN TRANSIT SYSTEM AND AFFILIATED COMPANIES

Revenue from transportation:	
Passenger revenue.....	\$38,376,581
Freight revenue.....	650,172
Chartered car revenue.....	873
Miscellaneous transportation revenue.....	516
Total revenue from transportation...	\$39,028,144
Other street railway operating revenues:	
Advertising.....	\$534,389
Other car and station privileges.....	297,475
Rent of buildings and other property.....	147,573
Rent of equipment.....	170
Rent of tracks and terminals.....	22,283
Miscellaneous receipts.....	42,289
Total other street railway operating revenues.....	\$1,044,181
Total street railway operating expenses.....	\$40,072,326
Operating expenses:	
Maintenance of way and structure.....	\$3,742,677
Maintenance of equipment.....	5,671,801
Operation of power plant.....	3,428,726
Operation of cars—trainmen's wages.....	6,514,423
Operation of cars—other expenses.....	3,908,713
Damages.....	1,277,771
Legal expenses in connection with damages.....	174,478
General law expenses.....	105,333
Other general expenses.....	1,156,119
Freight expenses.....	519,303
American railway traffic company—expenses.....	60
Total operating expenses.....	\$26,499,408
Net revenue from operation.....	\$13,572,917
Taxes accrued on operating properties.....	2,738,946
Operating income.....	\$10,833,970
Non-operating revenue:	
Rents accrued from lease of road.....	\$61,467
Miscellaneous rent revenues.....	297,376
Interest revenues.....	428,865
Dividend revenues.....	61
Profits from operations of others.....	12,318
Miscellaneous.....	151,366
Total non-operating revenues.....	\$951,456
Non-operating revenue deductions:	
Rent expense.....	\$1,000
Net non-operating income.....	\$950,455
Gross income.....	\$11,784,425
Income deductions:	
Interest deductions.....	\$7,431,050
Rent for lease of other road and equipment.....	25,000
Other deductions.....	306,309
Total income deductions.....	\$7,762,360
Balance.....	\$4,022,065
Less accruing to minority interests.....	36,000
Net Income.....	\$3,986,059

controlled through stock ownership by the B.-M. T. He said that the prosperity or adversity of the subway and elevated lines was determined by the earnings of the New York Rapid Transit Corporation and not by the earnings of the Brooklyn-Manhattan Transit Corporation. The latter property has a substantial income from bonds and other indebtedness of the surface line companies owned by the holding company and those earnings contribute to the income of the B.-M. T. During the year ended June 30, 1924, the B.-M. T. owned 188,138 shares of stock of the New York Rapid Transit Corporation. During that same period, the revenues of the New York Rapid Transit Corporation failed by \$5,148,948 to meet the annual interest and sinking fund of the company's and the city's investment.

Hearing on Receivership Claims Closed

The second and closing hearing on claims growing out of the receivership for the Pittsburgh Railways, lifted last February, was held recently by former

OPERATING RESULTS OF RAPID TRANSIT LINES UNDER FIVE-CENT FARE CONTRACT WITH CITY

	Year Ended June 30, 1924	Period Aug. 4, 1913, to June 30, 1924
Revenue.....	\$27,707,951	\$182,485,439
Operating deductions and company's first preferential.....	23,463,470	170,443,916
Balance available for return on new money invested under contract.....	\$4,244,480	\$12,041,522
Company's second preferential representing interest and sinking fund on company's contribution to construction and equipment under contract.....	5,316,510	27,667,840
Deficit representing amount by which revenue failed to equal interest and sinking fund on company's contribution to construction and equipment under contract.....	\$1,072,029	\$15,626,318
City's preferential representing interest and sinking fund on city's contribution to construction under contract, unearned and unpaid.....	4,076,918	32,917,231
Deficit representing amount by which revenues failed to equal company's and city's interest and sinking fund on contributions to construction and equipment.....	\$5,148,948	\$48,543,550

Judge Henry G. Wasson, special master for the court in railway receivership matters. C. S. Mitchell, auditor, and Thomas Fitzgerald, general manager, for the railway, with others were heard, and Mr. Wasson announced he will now prepare his final report to the United States District Court, whose ward the railway was while in the hands of receivers.

It developed at one of the previous hearings that the receivers have paid no money out of the \$500,000 left in their hands last April and that payment of their counsel and others ceased on Feb. 1, at which time the company took over the property. The receivers will be discharged officially when Mr. Wasson's report on the case is approved by the United States District Court.

\$1,000,000 Detroit Equipment Trust Issue Includes Buses

Eight heavy interurban passenger cars with motors, 6 interurban passenger chair cars with motors, 15 double-truck, 52-passenger one-man cars with motors, 50 box cars each of 30 tons capacity, 25 29-passenger, single-deck, six-cylinder motor coaches, 10 66-passenger, semi-closed, double-deck, six-cylinder motor coaches and 40 29-passenger, single-deck, four-cylinder motor coaches have been pledged to the Union Trust Company, Cleveland, by the Detroit United Railway as security for an issue of \$1,000,000 of general equipment trust 6 per cent certificates, series A. The securities are being offered to the public by Watling, Lerchen & Company, Detroit, and the Union Trust Company, Cleveland, at prices to yield from 5 per cent to 6 per cent, depending upon the maturity. The equipment pledged as security for the loan cost in excess of 133 per cent of the principal amount of the issue.

The equipment certificates are dated Nov. 1, 1924, and are due in equal semi-annual payments in annual amounts of \$150,000 for the first five years and \$50,000 for the remaining five years. Payment of principal and interest is unconditionally guaranteed by the Detroit United Railway by indorsement on each certificate. The equipment will be leased to the Detroit United Railway at rentals sufficient to provide for the semi-annual installments of both interest and the amount due to amortize the purchase cost.

Service Resumed in Kewanee

After a suspension of more than a year railway service was resumed in Kewanee, Ill., on Nov. 29 by the Kewanee Public Service Company. Cars in Kewanee and on the interurban line between Kewanee and Galva ceased to operate because of a combination of circumstances, prominent among which were jitney competition and the increased use of the private automobile. The property was then under the management of the Galesburg & Kewanee Electric Railway.

The intention was to scrap the line, but in June of this year the citizens of Kewanee, a town of 17,000 inhabitants, voted to accept suggestions made by B. F. Lyons, the new owner, for rehabilitating the property. All Mr.

Lyons wanted was assurance that in the future the company would be dealt with fairly by the public.

The action of the voters granted the Kewanee Public Service Company a franchise to operate the electric and gas utilities in Kewanee for a period of twenty-five years. The railway franchise, granted at the same time, extended that grant for a period of twenty years, the longest term obtainable under the Illinois law. As a result of the negotiations conducted at that time the Kewanee Public Service Company was organized to own and operate the electric light and power, gas and street railway business in Kewanee, the gas business in Galva, and do electric light and power business in Sheffield and Neponset. The company, through its subsidiary, the Kewanee & Galva Railway, will also operate a short interurban line connecting Kewanee and Galva. The whole undertaking was financed largely through the sale last July of \$1,200,000 of first mortgage 6 per cent gold bonds, Series A of the Kewanee Public Service Company, Kewanee, Ill. The proceeds of this issue was used by the company to take over the properties of the Consolidated Light & Power Company, the municipal plant built by the city of Kewanee and to acquire the street railway and interurban properties.

Status of Denver Viaduct Claims Fixed

The title "200,000 Verdict Against Denver Tramway," with which an item about the Denver Tramway in the *ELECTRIC RAILWAY JOURNAL* for Oct. 25 was introduced, was somewhat misleading. The facts are that the city of Denver applied to the lower court for an order to have the monthly payments under the 1906 franchise declared to be in a preferred class. This plea was denied. The city then appealed to the Circuit Court of Appeals. That court held that the payments accruing subsequent to the receivership were in the nature of operating expenses and therefore entitled to preference, while those accruing prior to the appointment of the receiver were entitled to preference only over ordinary creditors but junior to lien holders which had attached. The only question involved in the proceedings was whether these payments were in a preferred class. It was never the contention of the railway that it did not owe the money.

The Sixteenth Street viaduct and the extensions thereto were originally constructed in 1889 and 1910 respectively by predecessor companies of the Denver Tramway at a total cost of \$256,231 and deeded to the city under an agreement that the city was perpetually to maintain it. The steam railroads and other interests subsidized the construction of the old viaduct to the extent of \$79,897.

It was decided by the city in 1921 to rebuild the viaduct, and in order to insure that the work would be done expeditiously and at the least cost to the city, it was decided to use the facilities of the tramway. An agreement was made with the city to pay on the basis of actual cost for such work as it ordered done by the tramway. The

actual cost of the work performed for the city by the company was \$67,671 and bills were rendered accordingly.

In addition to the work done for the city, the company expended for its own account \$100,033 on track, overhead paving, etc., and also suffered an increase of \$76,444 in operating expense by reason of the rerouting of service while the viaduct was under construction. No part of these two amounts was included in the bill against the city.

Mortgage Bonds Offered.—Dillon Read & Company and Tucker, Anthony & Company, New York, are offering 195 and interest to yield about 5.35 per cent \$1,000,000 in first refunding mortgage 5 per cent sinking fund gold bonds of the Manchester Traction, Light & Power Company, Manchester, N. H. The bonds are dated Aug. 1, 1917, and are due Aug. 1, 1952. The company operates railways in Manchester and vicinity.

Auction Sales in New York.—At the public auction rooms of A. H. Muller Sons there were sold this week \$2,000,000 of Twenty-eight & Twenty-ninth Streets Crosstown Railroad, New York first mortgage 5 per cent gold bonds due October, 1996; October, 1908, and subsequent coupons attached, \$50 lot. Last week at the same offices there were sold 20 shares of West Virginia Traction & Electric Company 7 per cent cumulative preferred, \$5 for the lot, and certificates of deposit for 116 shares of Kansas City Railways preferred; certificates for 26 shares Kansas City Railways common, \$36 lot; also \$12,000 of Berwick & Nescopeck Street Railway first mortgage 5 per cent bonds, due 1944, \$550 lot.

New Directors for Illinois Properties.—George F. Otis, president of the Central Trust Company of Illinois, Chicago, has been elected a director of the Illinois Power & Light Corporation, and George T. Buckingham, of the law firm of DeFrees, Buckingham & Eaton, Chicago, has been elected a director of the North American Light & Power Company, both of which are included in the group of properties of which the Illinois Traction System is a part.

Stock of Jamaica Company Increased.—Shareholders of the Jamaica Public Service Company, Ltd., Kingston, Jamaica, B. W. I., on Nov. 28 approved a resolution increasing the authorized capital of the company from \$1,500,000 to \$2,000,000, the increase to take the form of \$250,000 in 7 per cent cumulative preference stock B of a par value of \$5 per share and \$250,000 in shares of ordinary stock of a par value of \$5 each. Included in the property of the company are 26 miles of electric railway.

Restoration of Service on Worcester Guarantees.—The Worcester Consolidated Street Railway has not entirely abandoned the idea of restoring service from Worcester, Mass., and Leicester and Spencer. Clark V. Wood, president, says that service might be restored if there was any indication of sufficient demand or any assurance of support from town officials. The Spencer line at one time was one of the principal suburban lines of the company. It was discontinued several

months ago when bus competition made it impossible to operate the route to advantage. At that time townspeople expressed preference for buses.

Discontinuance Expected.—The Medway & Dedham Street Railway, which runs through the towns of Medway, Millis, Westwood and Dedham, Mass., planned to suspend operations Dec. 1. The action was decided upon when it became apparent that the accumulating deficits could not be overcome. Last year each town which the road served appropriated \$1,000 for assistance. The deficit kept growing, however, and the directors decided not to burden the towns any longer. The line has been in operation for 25 years. It originally ran to Franklin. Failure to show profit resulted in the junking of the Franklin line several years ago. Present plans call for early disposition of the entire property, including the carhouse and power station at Westwood. The road is 18 miles long. It was leased by the Milford & Uxbridge Street Railway for several years. That company gave up control three years ago.

Mortgage Bonds Offered.—Harris, Forbes & Company and Spencer Trask & Company, New York, are offering at 97½ and interest yielding more than 5.15 per cent \$1,100,000 of first mortgage gold bonds of the Wisconsin Gas & Electric Company, Kenosha, Wis. The bonds, known as 5 per cent series A, are dated June 1, 1912, and are due June 1, 1952.

Deficit of \$628,480.—The total revenue of the Interborough Rapid Transit Company, New York, N. Y., for the four-month period ended Oct. 31, 1924, was \$18,422,630. This represented an increase of \$465,524 over the similar period a year ago. The operating expenses, taxes and rentals paid the city for the old subway were \$12,426,868, a decrease of \$426,957 over the similar four months in 1923. The income available for all purposes for the four-month period of 1924 ended Oct. 31 was \$5,511,379, an increase of \$1,473,183 over a similar period a year ago. The balance after actual maintenance in 1924 was a deficit of \$628,480, an increase of \$1,168,234 over the four-month period ended Oct. 31, 1923.

Hearings on Abandonment Concluded.—Hearings on the proposed abandonment of the lines of the Pacific Electric Railway in Riverside, Cal., before the State Railroad Commission closed recently. The company provided statements to show that it had been losing money steadily on the local lines. The matter has been referred to before in the ELECTRIC RAILWAY JOURNAL.

Final Judgment in Receivership Case.—The Court of Appeals in Albany has handed down a decision confirming a judgment obtained in June, 1923, by Newton M. Hudson, receiver for the Central Park, North & East River Railroad, against the Forty-second Street, Manhattanville & St. Nicholas Avenue Railway. The amount of the judgment is \$51,506. The decision will bring to an end a receivership dating back to 1912, and make it possible for the Central Park Company to pay to its creditors 100 cents on the dollar. The Central Park Company formerly was one of the leased lines operated by the Metropolitan Street Railway. In

August, 1908, the United States District Court ordered it turned back to its stockholders, terminating the lease. George W. Lynch, at that time receiver for the company, succeeded after a long legal battle, in reducing the claims against the company to \$303,000. Finally there remained a claim on the part of the Central Park Company against the Forty-second Street, Manhattanville & St. Nicholas Avenue Railway under an old trackage agreement. This claim was prosecuted and resulted finally in the decision mentioned previously. Mr. Lynch died in 1915 and John Beaver was appointed to succeed him. He died in 1917 and Mr. Hudson succeeded him.

Expenses Lower.—The Grand Rapids Railway, Grand Rapids, Mich., recently reported to the city manager that operating expenses were reduced \$2,047 in October from the October, 1923, figure. The report shows the company failed by \$11,853 to return its allowable 7½ per cent on its valuation. There was

only 1.13 per cent decrease in the passenger revenue and the gross income of \$49,632 showed an increase of \$2,584 over October, 1923.

\$1,250,000 of Preferred Stock Offered.—Offering is being made by Pyncheon & Company, West & Company and Jackson & Curtis, New York, of a new issue of \$1,250,000 Broad River Power Company 7 per cent cumulative preferred stock. The Broad River Power Company was organized in July, 1924, in South Carolina for the purpose of acquiring the entire outstanding common and preferred stock of the Columbia Railway, Gas & Electric Company, which owns or controls all the outstanding common stock of the Parr Shoals Power Company and Columbia Gas Light Company, Columbia, S. C. In pursuance of this plan the company will now take over substantially all of such preferred and common stock of the Columbia Railway, Gas & Electric Company and of the preferred stock of the Parr Shoals Power Company.

Legal Notes

MISSOURI.—*Passenger Remains Such Until He Has Alighted and Is Entitled to High Degree of Care While Alighting.*

In this case, the conductor on an interurban road was assisting passengers to alight at a stop and after helping a woman down part way, turned to help another, and the first one fell and was injured. The court held that a passenger remains such until he alights and that a very high degree of care is imposed by law on the railway during the time that the passenger is attempting to alight. Since the conductor undertook to aid this passenger, he should have used due care in doing so. (*Lackey vs. Missouri & K. I. Railway*, 264 Southwest. Rep., 807.)

OKLAHOMA.—*Powers of Public Service Commission—Regulation Does Not Mean Management or Operation by Commission.*

This case was an appeal from a ruling of the State Corporation Commission of Oklahoma that persons who dine in the railroad restaurants of the Santa Fé Railroad must wear coats was unreasonable. The ruling was directed to Fred Harvey, a corporation operating the dining rooms, but the railroad company joined in the appeal. The Oklahoma Supreme Court, in deciding against the commission, laid down certain principles in regard to commission regulation which are of interest. One was that the commission has authority to deal with the servants of a public utility only so far as may be necessary to carry into effect a lawful order against its master or principal, and against such principal should all such orders be entered. A second was that while much power is by law given to the Corporation Commission in the regulation of public utilities, yet the utility is not the property of the commission or the state, but belongs to the company and its stockholders, and the officers and

directors by them selected must, under proper regulation, be permitted to manage the property in such proper way as to earn and pay, if they lawfully can, just dividends to the stockholders. Regulation must not be so far extended as to constitute management or operation. A third was that a public utility has the right to prescribe and enforce reasonable rules and regulations for the government and use of its property, and no such rule should be abrogated by the Corporation Commission, unless it is contrary to the law of the state, or is clearly proved to be unjustly and injuriously discriminatory, or is so arbitrary and unreasonable as to be decidedly unjust to its patrons. A rule that is made applicable equally to all and with which all can comply with equal ease is not discriminatory. (*Harvey et al. vs. Corporation Commission of Oklahoma*, 229 Pacific Rep., 428.)

TEXAS.—*Duty of Railway Company to Warn Employees of Independent Contractor of Danger. Damages Collectible from Both Railway and Employer.*

A caseway which was used by an electric railway and several steam roads was destroyed in part by a storm, and its reconstruction was let to a contractor who agreed to be responsible for injuries developing in the work. An employee of the contractor while operating a derrick was killed by an electric shock when the cable on the derrick came in contact with the overhead trolley wire. The decedent's representatives collected a certain amount from the insurance company protecting the contractor under the workmen's compensation act and an additional amount from the electric railway, it being held that the railway had not sufficiently warned the employee of the contractor of the danger from its uninsulated wires. (*Galveston-Houston Elec. Ry. Co. et al. vs. Reinle*, 264 Southwest. Rep., 783.)

Personal Items

Stone & Webster Managerial Changes Announced

Walter M. Bird, formerly manager of the Keokuk, Iowa, Electric Company, has been appointed manager of the Paducah, Ky., Electric Company and the Paducah Railway, succeeding Alfred S. Nichols, who is now manager of the Jamaica Public Service Company, Ltd., at Kingston, Jamaica. Philip M. Wentworth, formerly manager of the Fort Madison, Iowa, Electric Company and Dallas City, Ill., Light Company, succeeds Mr. Bird as manager of the Keokuk company, and J. Bertram Hayes, for the past eighteen months assistant to the manager of the Jamaica Public Service Company, Ltd., is the new manager of the Fort Madison and Dallas City companies. All these utilities are under the executive management of Stone & Webster, Inc., Boston, Mass.

A. L. C. Fell an Outstanding British Tramway Figure

The duties of A. L. C. Fell, who will retire as general manager of the London County Council Tramways, London, England, on Dec. 31, will be carried on after that time, temporarily at least, by J. K. Bruce, traffic manager of the system. As explained very briefly in the *ELECTRIC RAILWAY JOURNAL* for Nov. 8, Mr. Fell is retiring owing to ill health. For 21 years he has occupied the post that he is now about to relinquish.

In a full-page appreciation of Mr. Fell which the *Tramway and Railway World* published in its issue of Nov. 20, that paper explained that during Mr. Fell's tenure of office in London, traffic receipts and the number of passengers went up rapidly for a long time, but that there was a slacking down during the war, followed by great increases of working expenses. Finally came the great development of omnibus competition. This same English authority points out that it is a notable fact that the average speed of the lines under Mr. Fell has been gradually increased until it is now 9½ m.p.h., the highest in Great Britain.

Mr. Fell is by training an electrical engineer. He was responsible for the installation of electric traction on the tramways of Cork. In 1900 he became tramway electrical engineer to Sheffield Corporation and superintended the electrification of the lines there. Thereafter he became general manager, and in 1903 he resigned his position at Sheffield to become general manager of London County Council Tramways.

A. J. Klatte in New Post at Chicago

A. J. Klatte has been appointed assistant electrical engineer of the Chicago Surface Lines. There has been no such title in the Surface Lines



A. J. Klatte

organization since 1915, at which time H. M. Wheeler died. The electrical engineer, J. Z. Murphy, has not been in good health for some time past and during his absence the department will be under the supervision of Mr. Klatte.

Mr. Klatte was born at Milwaukee, Wis., on July 1, 1879. He received his preliminary education at Beloit College and was graduated from the school of engineering at the University of Wisconsin in 1905. His first work was as level man and transit man on steam railroads. He has been connected with the Chicago street railway properties since 1908. His first work there was as conduit engineer with the Chicago Union Traction Company. Later he was engineer in charge of conduits and since the Surface Lines was formed in 1914 he has been engineer of electrical distribution.

E. G. Dunlap Vice-President at Youngstown

Elton G. Dunlap was elected vice-president of the Pennsylvania-Ohio Power & Light Company and the Pennsylvania-Ohio Electric Company,



E. G. Dunlap

Youngstown, Ohio, on Nov. 20 to succeed the late Randall Montgomery. The two companies operate the power and light properties in Youngstown and in New Castle, Pa.; Sharon, Pa., and elsewhere in eastern Ohio and northwestern Pennsylvania and the interurban and city railways and coach lines in the same territory. Mr. Dunlap was born near Youngstown on Oct. 20, 1881. He entered the employ of the railway and electric companies in 1901 in the accounting and treasury department and rose through various grades of accounting and treasury work till he was elected treasurer of the properties in 1910. He has held that office since and continues now as treasurer as well as vice-president.

Obituary

John Lyell Harper

John Lyell Harper, at one time operating and construction engineer for the Twin City Rapid Transit Company, Minneapolis, Minn., and recently vice-president and chief engineer of the Niagara Falls Power Company, Niagara Falls, died on Nov. 28. Mr. Harper was considered one of the leading hydro-electric engineers in the United States. In 1902 Mr. Harper became associated with the Niagara Falls Hydraulic Power & Manufacturing Company as assistant engineer to the late Wallace C. Johnson. Sixteen years later, when the various power interests at Niagara Falls were grouped into a new corporation, under the name of the Niagara Falls Power Company, Mr. Harper was made chief engineer. Upon completion of the war-time power plant, he was elected vice-president of the corporation. Mr. Harper was graduated from Cornell University. He was fifty-one years old.

J. M. McElroy, formerly general manager of the Manchester Corporation Tramways, Manchester, England, died on Nov. 16 in Lancashire. He retired from the managership in February, 1922, owing to ill health. Mr. McElroy had been in the Manchester municipal service in different capacities since 1880. In 1901 he was appointed manager of the tramway undertaking after it was acquired by the municipality. It was under his auspices that the Manchester system was developed. He visited the continent of Europe and the United States to study tramway matters and during the war was a consultant to the government on transportation questions. Mr. McElroy was an original member of the Municipal Tramways Association and in the position of secretary and later as president he contributed largely to the growth of that body. He was largely responsible for the formation of the National Joint Industrial Council for the tramway industry.

Dr. Charles A. Abbott, who for many years has been an examining physician and surgeon for the International Railway, Buffalo, N. Y., died Dec. 1 after an illness of less than two weeks. He was stricken after testifying in court in a negligence case for the railway company.

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

Order Placed for Experimental Buses in Detroit

The city of Detroit proposes to rent 25 buses from the Dodge Brothers Motor Company. Action to this end was recommended by the Street Railway Commission following a conference between the members of the commission and John W. Smith, Mayor of Detroit. Bids were asked for the rental of buses to the city for use in conjunction with the municipal railway. The City Council has informally approved the plan.

The commission also recommended the purchase of five buses from each of three firms: The Yellow Coach Manufacturing Company, Chicago; the Standard Motor Truck Company, Detroit, and the Gotsfredson Truck Company, Detroit. The idea is to make a

the purchase price of the buses at the end of four months if it is decided to purchase them from Dodge Brothers.

Mack Parlor Car Buses on Rochester Run

The Third Avenue Bus Company, a subsidiary of the New York State Railways, Rochester, has recently placed in service two of the latest type of luxurious Mack parlor car buses. These buses are operating on a regular schedule between the downtown section of Rochester and the town of Browncroft. The fare charged is 25 cents.

The bodies were built by the Lang Body Company, Cleveland. They seat 22 passengers in comfortable individual wicker chairs upholstered in genuine leather. Space is provided over the rear wheel for housing passengers'

New Tramway System in Argentina

The municipal authorities of the city of Rosario, Argentine Republic, in May, 1924, sanctioned an ordinance calling for public bids for the construction of nearly 150 km. of a new system of electric street railway. This new installation will practically double the length of track now in service. The successful bidder will have 5 years within which to complete the contract, and is obligated to open for public service 25 km. of new lines each year.

In the descriptive matter sent out by the municipality it is specified that the gage of the track shall be 1 m. 435, that the trolley wire shall be of hard-drawn copper or phosphorus bronze at least 8.5 millimeter diameter and that the rails in all paved streets shall be of the type called Phoenix, weighing 45 kilos per lineal meter or of the Vignole type weighing 33 kilo per meter in unpaved streets.

Other things specified have to do with various phases of the technical and financial sides of the contract and the conditions under which they may be operated during the life of the concession.

The bids will be opened in Rosario on April 2, 1925. Requests for the usual data sheets and contract forms should be made to Senor Don Carlos Edwards, pro-secretario, Secretaria de la Intendencia Municipal, Rosario de Santa Fé, Argentina.

Mention was made of this project in the *ELECTRIC RAILWAY JOURNAL*, issue of Nov. 22, page 900. Details covering the complete specifications may be inspected at the New York offices of this paper.

200 Gas-Electric Buses for Philadelphia

The Philadelphia Rural Transit Company, a subsidiary of the Philadelphia Rapid Transit Company, has placed orders for 200 gas-electric buses after a series of tests. All of the electrical equipment on the first bus and on the 200 now on order is supplied by the General Electric Company for the Yellow Coach Manufacturing Company, Chicago.

These are double-deck buses, seating 64, of the type usually equipped with mechanical drive. The bus on which the first electrical equipment was installed weighs 16,760 lb. completely equipped.

Power is supplied by a six-cylinder Herschell-Spillman engine with a 4-in. bore and 6-in. stroke. The clutch and change gear transmission which are ordinarily used are replaced by a generator, which is direct connected to the engine flywheel through an internal external gear coupling.

Two GE-1079 motors, rated 85 amp. at 125 volts and 1,650 r.p.m., mounted side by side in the chassis, transmit the power to the rear axle through two propeller shafts, each geared to a rear wheel, eliminating the differential, and providing constant torque on both wheels. These motors are self-ventilated and have a relatively long frame of small diameter permit-



Mack Bus Intended for De Luxe Suburban Service

comparative test of the various types of vehicles in actual service.

The commission's recommendation relative to the purchase of 15 double-deck buses, five from each of the two Detroit concerns and five from the Yellow Coach Manufacturing Company, was also approved by the Council in committee. Following a conference with Mayor Smith, it was announced that all were agreed that the city should encourage and support the motor bus industry in Detroit, but that orders should not be placed with local manufacturers on the basis of civic pride alone, particularly if the purchases involved equipment that carried with it the possibility of still further experimental work on the part of the manufacturers.

The buses which the commission proposes to rent will provide transportation facilities for stub-end lines in outlying districts during the winter months. Each bus will accommodate 61 passengers, whereas the buses which are to be purchased will carry approximately 60 passengers each.

According to the terms proposed the city will pay a rental of 29 cents per mile. This rental will be applied on

baggage. Wide clear-vision windows, automatically operated by springs, are easily adjustable to any elevation desired.

The Mack bus chassis on which these bodies are mounted have a wheelbase of 230½ in. They are powered by four-cylinder bus engines of special design, having a 4½-in. bore and 5-in. stroke. Each is equipped with two independent sets of brakes, one set operating on the rear wheels and the second set on the drive shaft just rearward of the transmission. Patented Mack rubber shock insulators on the spring ends support the unusually low frame.

Big Bus Order Divided

Decision has been made by the Public Service Railway, Newark, N. J., to divide its order for 100 new buses between the Yellow Coach Company and the White Motor Company. This order was mentioned in *ELECTRIC RAILWAY JOURNAL*, issue of Nov. 15, 1924. Of the new buses 50 will be type Z, 29-passenger Yellows, and 50 will be Whites, type 50-A with Bender bodies. It is expected that deliveries will begin within the next three weeks.

ELECTRIC RAILWAY MATERIAL PRICES—DEC. 2, 1924

Metals—New York	
Copper, electrolytic, cents per lb.	14.25
Lead, cents per lb.	8.65
Nickel, cents per lb.	29.50
Zinc, cents per lb.	7.40
Tin, Straits, cents per lb.	55.00
Aluminum, 98 to 99 per cent, cents per lb.	27.00
Babbitt metal, warehouse, cents per lb.:	
Fair grade.	60.00
Commercial.	28.00
Bituminous Coal	
Smokeless mine run, f.o.b. vessel, Hampton Roads.	\$4.275
Somerset mine run, Boston.	2.075
Pittsburgh mine run, Pittsburgh.	1.875
Franklin, Ill., screenings, Chicago.	1.475
Central, Ill., screenings, Chicago.	1.30
Kansas screenings, Kansas City.	2.35
Track Materials—Pittsburgh	
Standard Bessemer steel rails, gross ton.	\$43.00
Standard open hearth rails, gross ton.	43.00
Railroad spikes, drive, Pittsburgh base, cents per lb.	2.875
Tie plates (flat type), cents per lb.	2.425
Angle bars cents per lb.	2.75
Rail bolts and nuts, Pittsburgh base, cents, lb.	3.875
Steel bars, cents per lb.	2.10
Ties, white oak, Chicago, 6 in. x 8 in. x 8 ft.	\$1.45
Hardware—Pittsburgh	
Wire nails, base per keg.	2.85
Sheet iron (28 gage), cents per lb.	3.50
Sheet iron, galvanized (28 gage), cents per lb.	4.60
Galvanized barbed wire, cents per lb.	3.65
Galvanized wire, ordinary, cents per lb.	2.60
Waste—New York	
Waste, wool, cents per lb.	16
Waste, cotton (100 lb. bale), cents per lb.:	
White.	13-19
Colored.	10-15

Paints, Putty and Glass—New York	
Linseed oil (5 bbl. lots), per gal.	\$1.08
White lead (100 lb. keg), cents per lb.	12.00
Turpentine (bbl. lots), per gal.	\$0.81
Car window glass, (single strength), first three brackets, A quality, discount*	84.0%
Car window glass, (single strength), first three brackets, B quality, discount*	86.0%
Car window glass, (double strength) all sizes, A quality, discount*	85.0%
Putty, 100 lb. tins, cents per lb.	4-6

* These prices are f.o.b. works, boxing charges extra.

Wire—New York	
Copper wire base, cents per lb.	16.375
Rubber-covered wire, No. 14, per 1,000 ft.	\$6.25
Weatherproof wire base, cents per lb.	17.75

Paving Materials	
Paving stone, granite, 4x8x4, f.o.b. Chicago, dressed, per sq. yd.	
Common, per sq. yd.	
Wood block paving 3½, 16 treatment, N. Y., per sq. yd.	\$7.67
Paving brick 3½x8½x4, N. Y., per 1,000 in carload lots	51.00
Crushed stone, 1-in., carload lots, N. Y., per cu. yd.	1.85
Cement, Chicago consumers' net prices, without bags.	2.20
Gravel, 1-in., cu. yd., f.o.b. N. Y.	2.00
Sand, cu. yd., N. Y.	1.00

Old Metals—New York and Chicago	
Heavy copper, cents per lb.	11.75
Light copper, cents per lb.	10.00
Heavy brass, cents per lb.	7.375
Zinc, old scrap, cents per lb.	4.125
Yellow brass, cents per lb. (heavy)	6.125
Lead, cents per lb. (heavy)	7.75
Steel car axles, Chicago, net ton	\$20.25
Cast iron car wheels, Chicago, gross ton	19.75
Rails (short), Chicago, gross ton	19.25
Itails, (relaying), Chicago, gross ton	26.50
Machine turnings, Chicago, gross ton	11.25

tting assembly under the body without sacrifice of road clearance.

After a series of exhaustive tests the bus using the electric drive was put into regular passenger service in August, 1924, and has been in constant operation since, averaging 150 miles daily.

Rolling Stock

Johnstown Traction Company, Johnstown, Pa., is considering the purchase of a number of light-weight, double-truck, one-man, two-man cars for city service.

Fresno Traction Company, Fresno, Cal., has received two of the new universal type cars; the remaining 10 are en route. They were built by the St. Louis Car Company and cost \$13,000 each. The cars are 48 ft. long. Each has a seating capacity of 50 persons. They may be operated by one or two-man crews. They are the first Fresno cars to be equipped with four motors, each of 30 hp. The cars were ordered more than a year ago, but delay in construction was due, it was stated, to difficulty in obtaining the safety door mechanism with which the cars are equipped.

Key System Transit Company, Oakland, Cal., has placed orders for 12 new cars to be shipped within 60 days from the plant of the American Car Company, St. Louis, and will be assembled in the Oakland shops. They will be of steel construction, mahogany interior trim and monitor topped. The weight of each, including body, truck and equipment, will be about 68,000 lb. The cars are of the center-door type and each one will have a seating capacity of 68.

Power Houses, Shops and Buildings

Penn Public Service, Warren, Pa., operating an interurban line between Warren and Jamestown, N. Y., has work under way for a complete remodeling of its terminal at Warren. Under the terms of the new plan the company's general offices will hereafter occupy the entire second floor of the company's three-story building at Liberty Street and Pennsylvania Avenue West.

Detroit, Mich., Department of Street Railways, suffered the loss of \$50,000 recently when its power plant "A" was crippled by fire. The damage was confined principally to machinery.

Trade Notes

Magnetic Signal Company, Los Angeles, Cal., announces that Ralph W. Payne has been appointed exclusive Southern representative for the company. His headquarters are in the Metropolitan Bank Building, 613 Fifteenth Street, N. W., Washington, D. C. He is in charge of sales and engineering for the Southern territory. Mr. Payne assumed his duties in Washington on Nov. 15.

Philadelphia Storage Battery Company, Philadelphia, Pa., together with the Roberts Battery Company, its New England distributor of starting, lighting and radio equipment, has moved its Boston office on Nov. 25 to occupy new quarters at No. 1 Brighton Avenue. Much-needed office space, parts and stock department and a good service station equipment will make it possible for the interests of all Phila-

delphia battery lines to be cared for much more efficiently than at any time in the past. George W. Holden is district representative.

A. C. Holden, formerly sales manager of the household appliance division of the General Railway Signal Company, Rochester, N. Y., has been appointed resident manager of the Pacific Coast territory, with headquarters at San Francisco, Cal. Mr. Holden's connection with the General Railway Signal Company began in 1910. Since then he has made a special study of installation and construction work and, in the capacity of field engineer, he had charge of the company's field office at St. Paul, and later was connected with the Chicago, Montreal, New York and Rochester offices. From June, 1916, to January, 1919, his entire attention was devoted to construction work in the eastern district, special attention being given to the signaling of the subway, tube and elevated construction of the New York Municipal Railway lines in New York and Brooklyn. Mr. Holden was born at Waterloo, Iowa. He was graduated from the electrical engineering department of Iowa State College. His first signal experience began in the summer of 1902, with the Hall Signal Company. During portions of 1904 and 1905 he was employed as laborer by the Taylor Signal Company, as paymaster by the Hall Signal Company and draftsman in the signal department of the Union Pacific.

Hyman-Michaels Company, Chicago, due to expansion in the railway equipment field, has engaged the service of F. W. Glauser, formerly associate with the Mid-Continent Equipment & Machinery Company, St. Louis, to assume the management of the equipment department for the Southern territory. Mr. Glauser has a wide and valued experience in railroad work. He will be located at St. Louis.

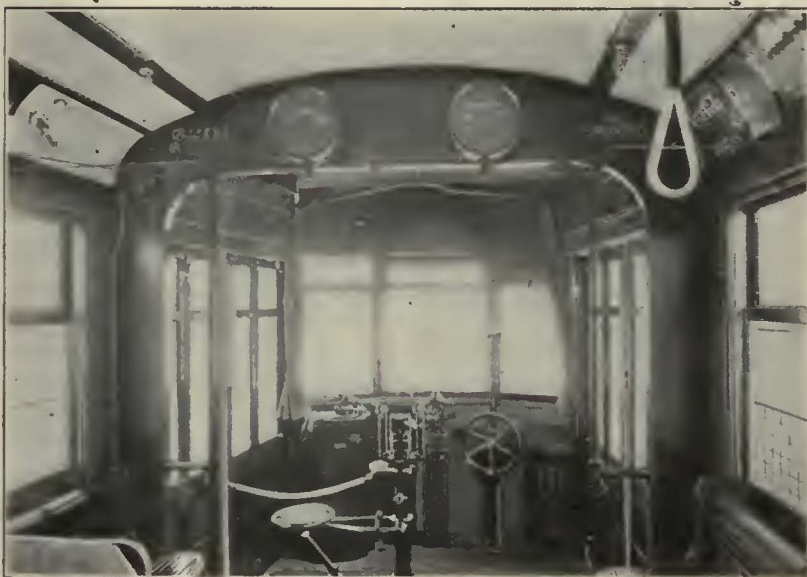
New Advertising Literature

General Electric Company, Schenectady, N. Y., has published "Pendant and Bracket Novalux," bulletin No. 43525, which describes and illustrates in 24 pages the different types of Novalux lighting units of the bracket and pendant types.

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has just issued a new 40-page publication containing transportation hints. The subjects treated are: One-man operation, multiple-unit operation, articulated and permanently coupled cars, double-deck cars, the trolley bus, the internal combustion engine, schedule speeds, methods of fare collection, safety zones, multiple berthing, routing the selective stop, queue loading, the traffic problem and the elimination of non-productive mileage. The purpose of the book is to summarize results that have been obtained on various railways throughout the United States using equipment of various types, and to suggest ways of improving the operation by the use of special equipment and methods. It is well written and is in effect a textbook on the subject of improving city transportation methods.

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It feels good
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reliable Peacock Staffless Brakes on up-to-date cars

If power goes off, and air brakes fail—with the car on a steep grade and 70 or 80 passengers crowded aboard—the Peacock Staffless WILL HOLD.

The stop will be sure—certain—GRADUATED—as will also be the RELEASE. There is no doubt about Peacock action—no failure—the control of the car is perfect at all times.

The Peacock Staffless occupies about half the space, weighs no more, and gives 3 times the power of the ordinary hand brake.

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Specify it on your new cars.



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Canadian Representative

Lyman Tube & Supply Company, Limited, Montreal, Canada

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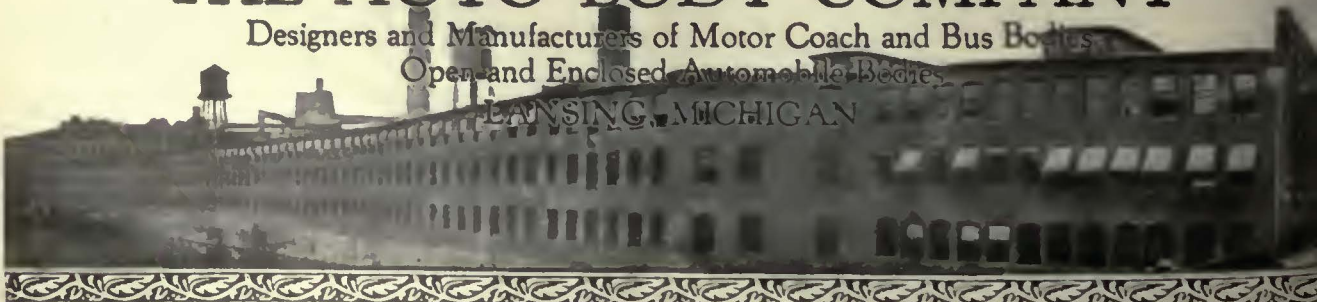
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Carnegie Steel Cross Ties
in 'low-maintenance-cost' track

It is not a mere coincidence that Carnegie Steel Cross Ties are found in many 'low-maintenance-cost' tracks.

An interesting example is the Gilbert Avenue Viaduct in Cincinnati. Carnegie Steel Cross Ties, embedded in concrete, were used on this job and the viaduct was opened for service in 1912.

In 1923—eleven years later—it was found necessary to renew the rails. The concrete foundation and ties were in good condition. The engineer in charge stated that the ties were in almost perfect condition—no corrosion—no wear under the rails, and looked good for 20 or 30 years more of service. This stretch of track has been subject to as severe conditions as possible in that city.

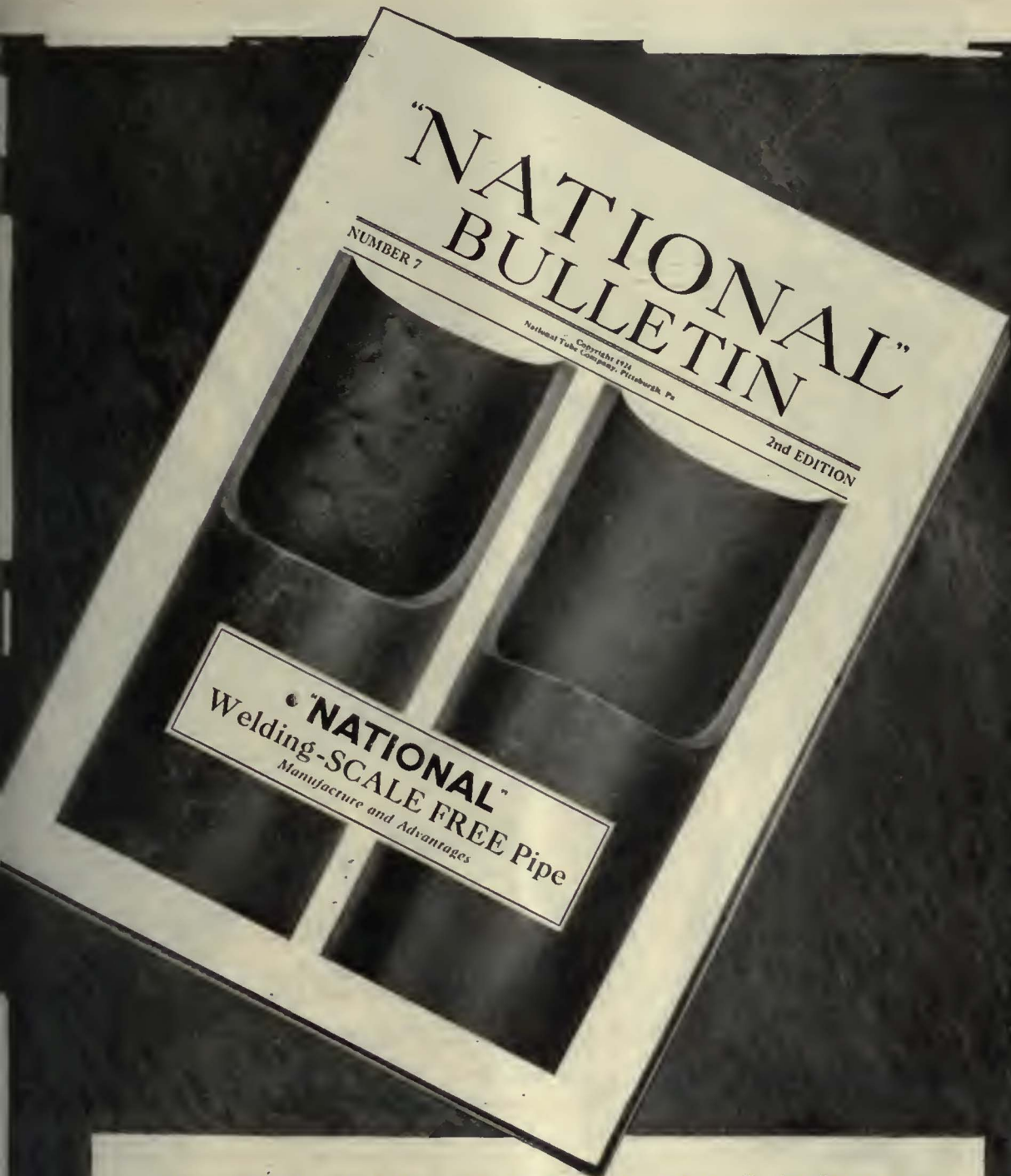
Due to their success with Carnegie Ties, Cincinnati is now using them in their new work. The picture above is of a recent installation in that city.

Booklet —“Steel Cross Ties”—on request.

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When you once set it up it stays set up! The powerful spring-equipped split-clamp device which takes the place of the old-fashioned lock-nut idea, holds with an unshakable grip. Yet it takes only a small monkey wrench and a moment's time to tighten it up. Like all other Boyerized equipment, McArthur Turnbuckles have an unusually long wearing life.

Try Them!

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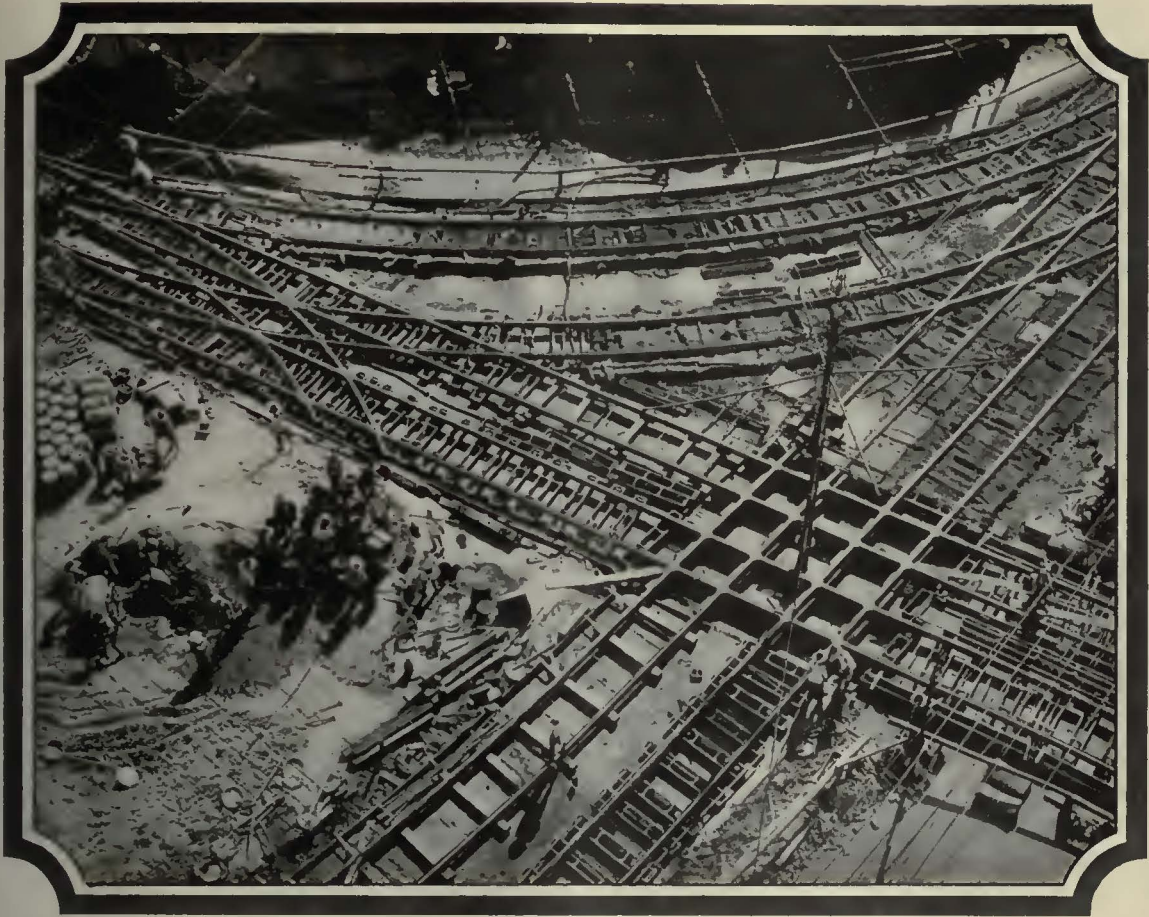
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This is station CCH the Consolidated Car Heating Company, broadcasting direct from its factory at Albany, on a wave length of one hundred per cent satisfaction.

“CONSOLIDATED” means DOOR ENGINES also!

THE message to listeners-in concerns door engines. You are invited to make a study of the Consolidated Door Engine proposition.

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DOOR ENGINES**



**CONSOLIDATED CAR HEATING COMPANY
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Write today for further particulars and prices.

St. Louis Car Company
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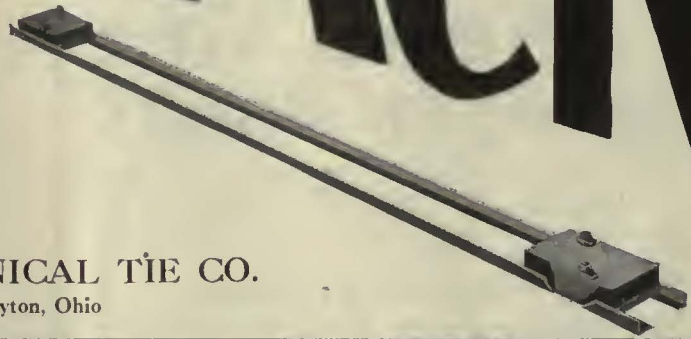
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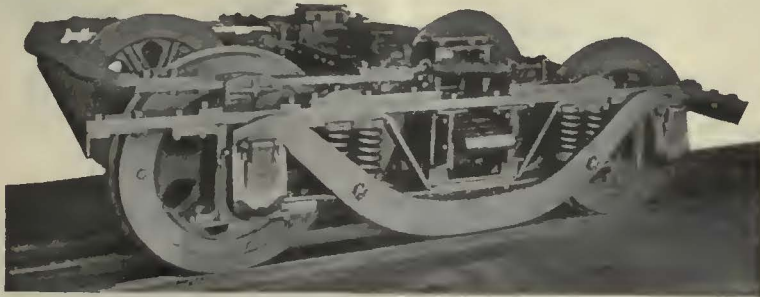
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Operating a street railway can do will tend more to insure a profitable operation than the installation of Dayton Resilient Track. *Ask us to explain.*



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This type of Baldwin Improved Motor Truck is specially recommended on long interurban lines, where "limited" or sleeping cars are operated. It is also suitable for use under double-truck electric locomotives.

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Our nearest representative will furnish detailed information upon request.

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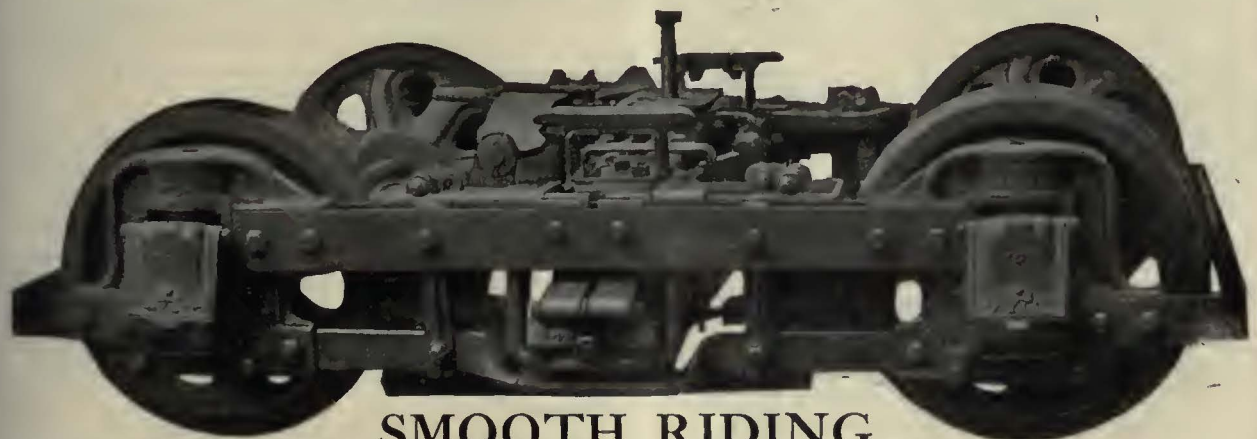
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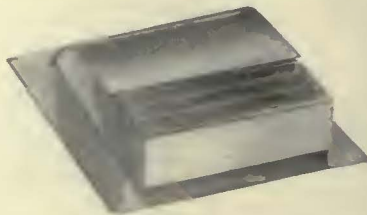
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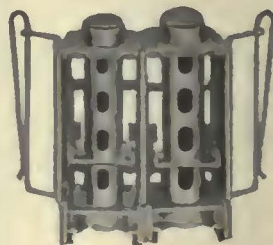
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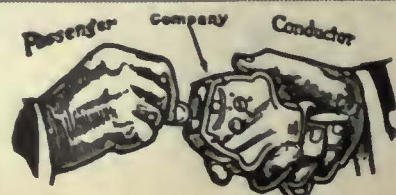
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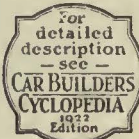
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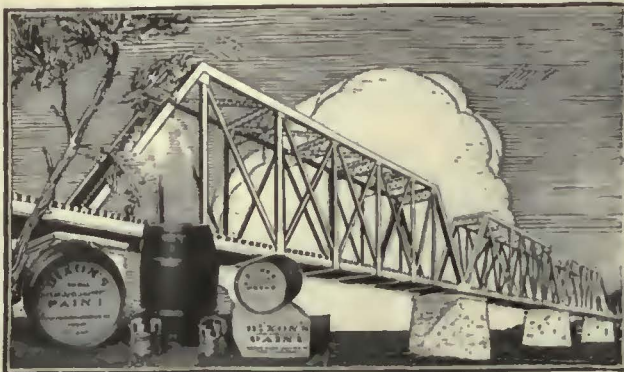
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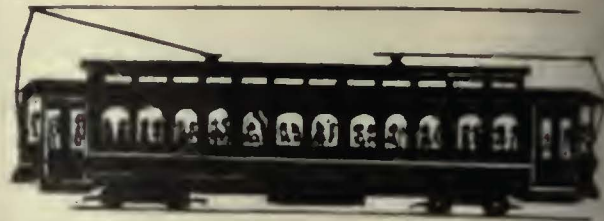
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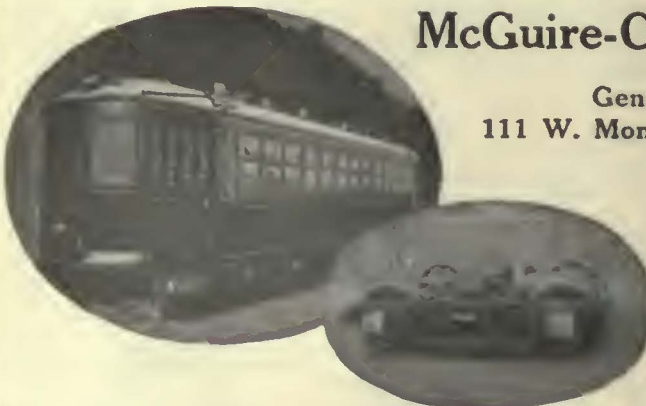
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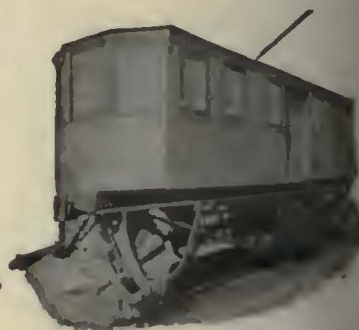
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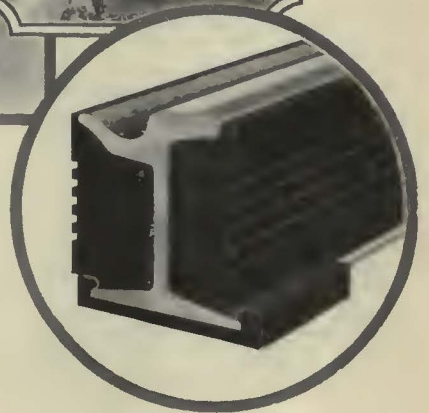
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- Pole Line Hardware**
Bethlehem Steel Co.
Ohio Brass Co.
- Pole Reinforcing**
Drew Elec. & Mfg. Co.
Hubbard & Co.
- Poles and Ties, Treated**
Bell Lumber Co.
International Creosoting & Construction Co.
National Pole Co.
Weyerhaeuser Sales Co.
- Poles, Metal Street**
Bates Expanded Steel Truss Co.
Electric Ry. Equip. Co.
Hubbard & Co.
- Poles, Ties, Posts, Piling and Lumber**
Bell Lumber Co.
International Creosoting & Construction Co.
National Pole Co.
Weyerhaeuser Sales Co.
- Poles, Trolley**
Anderson M. Co., A. & J. M.
Columbia M. W. & M. I. Co.
National Tube Co.
Nuttall Co., R. D.
- Poles, Tubular Steel**
Elec. Ry. Equip. Co.
Electric Service Sup. Co.
National Tube Co.
- Porcelain, Special High Voltage**
Lapp Insulator Co.
- Portable Grinders**
Buda Company
- Pathways**
Okonite Co.
- Power Saving Devices**
Nat'l Ry. Appliance Co.
- Pressure Regulators**
General Electric Co.
Westinghouse Elec. & M. Co.
- Pumps**
Allis-Chalmers Mfg. Co.
Ingersoll-Rand Co.
- Pumps, Vacuum**
Ingersoll-Rand Co.
- Punches, Ticket**
International Register Co., The
Wood Co., Chas. N.
- Rail Braces and Fastenings**
Ramapo Ajax Corp.
- Rail Filler**
Philip Carey Co.
- Rail Joints**
Carnegie Steel Co.
Rail Joint Co.
- Rail Grinders (See Grinders)**
- Rail Welding**
Rail Welding & Bonding Co.
- Rails, Relaying**
L. B. Foster Co.
Hyman-Michaels Co.
- Rails, Steel**
Carnegie Steel Co.
L. B. Foster Co.
- Railway Safety Switches**
Consolidated Car Heating Co.
Westinghouse Elec. & M. Co.
- Railway Welding (See Welding Processes)**
- Rattan**
Brill Co., The J. G.
Electric Service Sup. Co.
Hale-Kilburn Co.
Heywood-Wakefield Co.
St. Louis Car Co.
- Registers and Fittings**
Brill Co., The J. G.
Electric Service Sup. Co.
International Reg. Co., The
Rooks Automatic Reg. Co.
- Reinforcement, Concrete**
Amor, Steel & Wire Co.
Bethlehem Steel Co.
Carnegie Steel Co.
- Repair Shop Appliances (See also Coil Banding and Winding Machines)**
Columbia M. W. & M. I. Co.
Electric Service Sup. Co.
- Repair Work (See also Colls)**
Columbia M. W. & M. I. Co.
General Electric Co.
Westinghouse Elec. & M. Co.
- Repainers, Car**
Columbia M. W. & M. I. Co.
Electric Service Sup. Co.
- Resistance, Grid**
Columbia M. W. & M. I. Co.
- Resistance, Wire and Tube**
General Electric Co.
Westinghouse Elec. & M. Co.
- Resistances**
Consolidated Car Heating Co.
- Retrievers, Trolley (See Catchers and Retrievers, Trolley)**
- Rheostats**
General Electric Co.
Westinghouse Elec. & M. Co.
- Roofs**
Haskellite Mfg. Co.
- Sanders, Track**
Brill Co., The J. G.
Columbia M. W. & M. I. Co.
Electric Service Sup. Co.
Nichols-Lintern Co.
Ohio Brass Co.
- Sash Fixtures, Car**
Brill Co., The J. G.
- Sash, Metal, Car Window**
Hale-Kilburn Co.
- Scrapers, Track (See Cleaners and Scrapers, Track)**
- Screw Drivers, Rubber Insulated**
Electric Service Sup. Co.
- Sealing Materials**
Brill Co., The J. G.
- Seats, Bus**
Hale-Kilburn Co.
Heywood-Wakefield Co.
St. Louis Car Co.
- Seats, Car (See also Rattan)**
Brill Co., The J. G.
Hale-Kilburn Co.
Heywood-Wakefield Corp.
St. Louis Car Co.
- Second-Hand Equipment**
Electric Equipment Co.
Hyman-Michaels Co.
Transit Equipment Co.
Zelnicke Supply Co., W. A.
- Shades, Vestibule**
Brill Co., The J. G.
- Shovels**
Hubbard & Co.
- Shovels, Power**
Allis-Chalmers Mfg. Co.
Brill Co., The J. G.
- Signals, Car Starting**
Consolidated Car Heating Co.
Electric Service Sup. Co.
Nat'l Pneumatic Co., Inc.
- Signals, Indicating**
Nichols-Lintern Co.
- Signal Systems, Block**
Electric Service Sup. Co.
Nachod Signal Co., Inc.
Union Switch & Signal Co.
U. S. Electric Signal Co.
Wood Co., Chas. N.
- Signal Systems, Highway Crossing**
Nachod Signal Co., Inc.
U. S. Electric Signal Co.
- Slack Adjusters (See Brake Adjusters)**
- Slag**
Carnegie Steel Co.
- Sleeve Wheels and Cutters**
Anderson M. Co., A. & J. M.
Electric Ry. Equip. Co.
Electric Service Sup. Co.
More-Jones Brass & Metal Co.
Nuttall Co., R. D.
- Smokestacks, Car**
Nichols-Lintern Co.
- Snow-Plows, Sweepers and Brooms**
Brill Co., The J. G.
Consolidated Car Fender Co.
- Snow Sweeper, Rattan**
Heywood-Wakefield Co.
- Soldering and Brazing (See Welding Processes and Apparatus)**
- Spikes**
Amer. Steel & Wire Co.
- Special Adhesive Papers**
Irvington Varnish & Ins. Co.
- Special Trackwork**
Bethlehem Steel Co.
Lorain Steel Co., The
- Splicing Compounds**
Westinghouse Elec. & M. Co.
- Splicing Sleeves (See Clamps and Connectors)**
- Springs, Car and Truck**
Bemis Car Truck Co.
Brill Co., The J. G.
Fl. Pitt Spring & Mfg. Co.
St. Louis Car Co.
Taylor Electric Truck Co.
- Sprinklers, Track and Road**
Brill Co., The J. G.
- Steel Castings**
Wm. Wharton Jr. & Co., Inc.
- Steel and Steel Products**
Morton Mfg. Co.
- Steps, Car**
Morton Mfg. Co.
- Stokers, Mechanical**
Babcock & Wilcox Co.
Westinghouse Elec. & M. Co.
- Storage Batteries (See Batteries, Storage)**
- Strain Insulators**
Ohio Brass Co.
- Strand**
Roebbing's Sons Co., J. A.
- Subway Boxes**
Johns-Fratt Co.
- Superheaters**
Babcock & Wilcox Co.
Power Specialty Co.
- Sweepers, Snow (See Snow Plows, Sweepers and Brooms)**
- Switch Stands**
Ramapo Ajax Corp.
- Switches, Safety**
Johns-Fratt Co.
- Switches and Switchboards**
Allis-Chalmers Mfg. Co.
Anderson M. Co., A. & J. M.
Electric Service Sup. Co.
General Electric Co.
Westinghouse Elec. & M. Co.
- Switches, Selector**
Nichols-Lintern Co.
- Switches, Tee Rail**
Ramapo Ajax Corp.
- Switches, Track (See Track, Special Work)**
- Tampers, Tie**
Ingersoll-Rand Co.
Railway Track-work Co.
- Tapes and Cloths (See Insulating Cloth, Paper and Tape)**
- Tee Rail, Special Track Work**
Bethlehem Steel Co.
Ramapo Ajax Corp.
- Telephones and Parts**
Electric Service Sup. Co.
- T. Minals, cable**
Standard-Underground Cable Co.
- Testing Devices, Meter**
Johns Fratt Co.
- Testing Instruments (See Instruments, Electrical Measuring, Testing, etc.)**



Installing Carey Elastite Rail Filler. A tap of the mallet sets it securely in place.



Carey Elastite Rail Filler is made to exactly fit any rail section.

Madison Ave., Albany, N. Y. Carey Elastite Rail Filler Used.

Stop paving failure along your track!

When water gets between the rail and the paving, and freezes, something must yield. The paving blocks must buckle on each other, or the concrete must fail.

But if you lay a snug-fitting, water-tight, resilient asphalt cushion of Carey Elastite Rail Filler in the rail, bonding with the concrete or the bituminous filler, you eliminate the fundamental causes of pavement failure—rail vibration, traffic—impact, expansion and the action of water and frost, and you provide a cushion that greatly reduces traffic-noise.

THE PHILIP CAREY COMPANY
Lockland, Cincinnati, Ohio

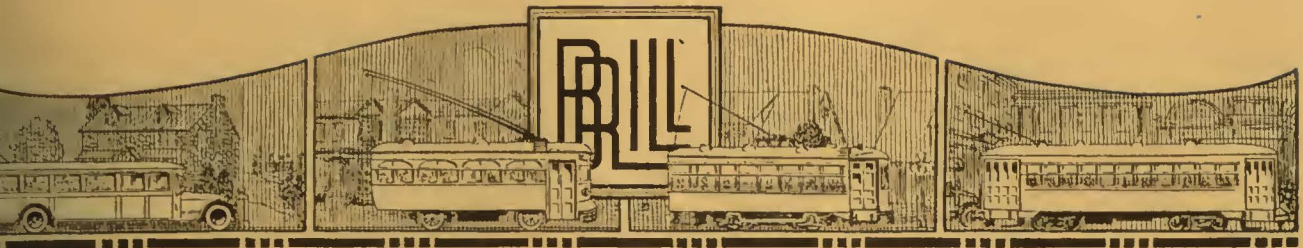
Carey Elastite
NAME REG. U.S. Patent Office

RAIL FILLER

Elastite Rail Filler Is Easy to Install

a tap of a mallet holds it in the web of the rail.

Carey Elastite Rail Filler is a composition of specially-tempered asphalt and fibre which is used as a resilient cushion between the rail and the pavement, absorbing traffic-impact, rail vibration and traffic-noise. It is preformed to fit any rail-section and is readily shaped on the job to fit any track-curve. It is unaffected by moisture or temperature changes and is enduring under all service conditions.

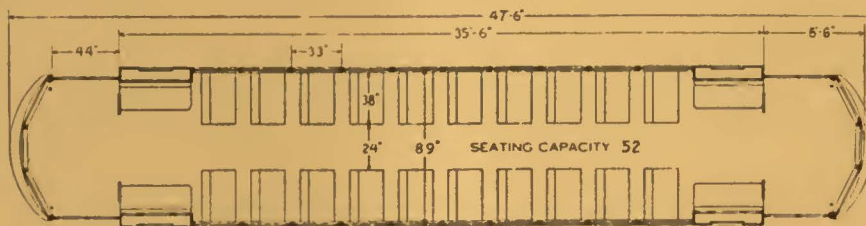


York Railway's New Cars are mounted on Brill 77-E Low-level Trucks

This type suburban car recently shipped to York, Pa. was not only designed to economize through comparatively light weight, but particular consideration was also given to attractiveness and riding comfort, features

which tend to increase passenger revenue.

The comfortable riding Brill 77-E Low-level Trucks, on which these cars are mounted, are equipped with Brill Twin Swing Links.



Equipped with four 40 Hp. Motors.
Total weight, 38,020 lb.

THE J. G. BRILL COMPANY
PHILADELPHIA, PA.

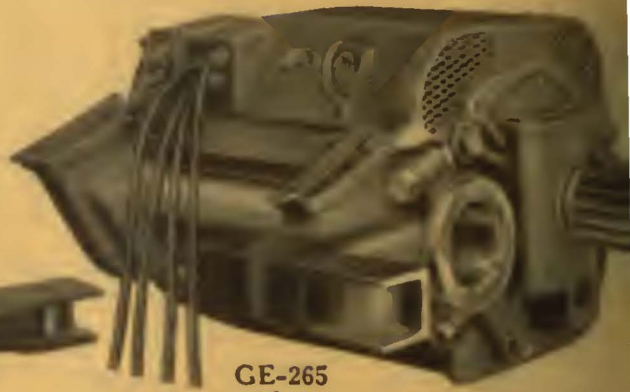
AMERICAN CAR CO. — G. C. KUHLMAN CAR CO. — WASON MANFG CO.
ST. LOUIS, MO. — CLEVELAND, OHIO. — SPRINGFIELD, MASS.



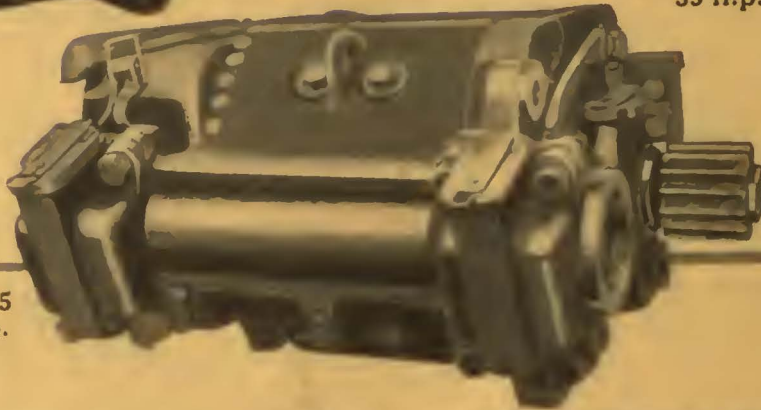
G-E Modern Railway Motors



GE-264
25 h.p.



GE-265
35 h.p.



GE-275
60 h.p.

These six standard G-E Motors will meet the motive power requirements of any city, suburban or interurban service. On an average they cost, for maintenance

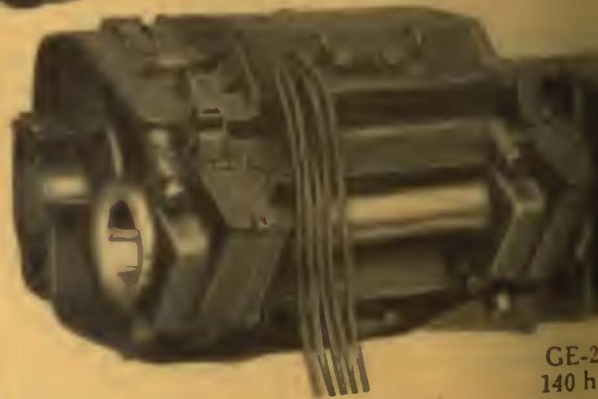
and inspection, only \$35 per motor per year. Consider the economy accruing from replacement of your old motors by one of these modern types.



GE-263
65 h.p.



GE-240
105 h.p.



GE-242
140 h.p.



GENERAL ELECTRIC

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