

ELECTRIC RAILWAY JOURNAL

Effective Tire Economy

AFTER all, *economy* is the vital factor in the eyes of the man who is looking for substantial profits from motorcoach transportation.

"Lowest possible cost per tire mile" is more than an aim. It is an absolute necessity for profitable operation.

The Royal Cord Motorcoach Tire meets the most severe tests of actual operating conditions. Its performance has been carefully checked on the road in every section of the country.

These tests have clearly demonstrated that the tire is right. Right in design. Right in construction. Right in its ability to deliver long, trouble-free mileage on the great coaches of today.

It cuts tire expense. It saves mechanical repairs. It prevents costly delays. It is *truly economical*.



United States  Rubber Company
Trade Mark



UNITED STATES
ROYAL CORD
Motorcoach

UNITED STATES TIRES ARE GOOD TIRES

In July, 1886, this photograph was taken on Washington St., Binghamton, N. Y.—on the first line in New York State to operate electric cars.



In Binghamton *Forty Years of Transportation Progress*

FORTY years ago this little open car began regular trips on the streets of Binghamton, N. Y. Strange as it may look today, in that day it represented modern transportation—for Binghamton was the first city in the Empire State to use electric cars.

Since then transportation has played an important part in the community life and growth of Binghamton and her thriving sister cities. Good trolley service has largely made possible the big

stores and busy offices of Binghamton and the factories and pretty homes of Endicott and Johnson City. And today, the Binghamton Railway Company is better equipped than ever before to serve its community. With a capable management, loyal to local interests and alert to every opportunity for community service; with well-kept roadways and modern steel cars, it has earned the confidence of the people. It is this confidence—this cooperation between business and transportation, that builds great cities and happy, prosperous communities.



Westinghouse Electric & Manufacturing Company

East Pittsburgh

Pennsylvania

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



1926

Westinghouse

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Dependable Westinghouse equipment has contributed much to good trolley service in Binghamton. The present standard cars of the Binghamton Railway Company are equipped with Westinghouse motors and HL control. These are thoroughly modern steel cars, each providing seats for 42 passengers.

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CONTENTS

Pages
331-368

August 28, 1926

Editorials	331
Medical Survey in Fort Worth Has Raised Health Standard of Employees.....	334
Northern Texas Traction Company, with a personnel of 610 males, exclusive of temporary men, follows closely the health of employees. Based on a re-examination of 461 males in 1925 and 360 in the year before.	
Traffic Lines Easily Marked in Youngstown.....	336
Track Extensions Improve Transportation Facilities in Newark	337
Public Service Railway has spent more than \$300,000 to develop a second north and south route through downtown section, and thereby relieve congestion on Broad Street. One and one-half miles of new track built.	
Pennsylvania-Ohio Employees Get Easements on New Right-of-Way	339
Traction Bridge Used by Highway Traffic.....	340
BY D. H. WALKER.	
Depreciating a Property Sold Below Cost.....	341
Replacement of elements when worn out is an important consideration in the charges to depreciation where capital invested is less than the physical value. Rate should make possible continued operation over a period of years.	
Safety Code for Amusement Parks in Preparation..	343
Highly Meritorious Booklets Issued at Chicago and Montreal	343
What One Car Said to Another.....	344
Novel Radio Stunt Provides Valuable Advertising..	346
Maintenance Notes	347
Light-Weight Bond Testing Car Effects 65 per Cent Saving...	347
Preventing Splitting of Wooden Dust Guards.....	348
Special Steel Used for Wear Blocks of Swing Links.....	348
Steel Cabinet for Storing Paint.....	348
New Equipment Available.....	349
Handle Switch Prevents Burned Fingers.....	349
Tractor Welders Now Available.....	349
American Association News	350
Program for Cleveland Convention Announced...	350
News of Other Associations.....	354
News of the Industry.....	355
Recent Bus Developments	360
Financial and Corporate	362
Personal Mention	365
Manufactures and the Markets.....	366

Looking Ahead

ONE of the most important functions of ELECTRIC RAILWAY JOURNAL is to help its readers to look ahead. Following as it does the developments in its industry from week to week throughout the civilized world it is in a position to interpret in the broadest sense any local situation that may have a general significance.

To this purpose the editorial pages of the paper are devoted. From week to week the industry's attention is directed to practices and tendencies which indicate the direction of development.

From that point, the JOURNAL goes a step further. It acts as counsellor and friendly critic. It endeavors to point ahead along the road of progress. It cautions its industry against practices that, though apparently expedient, endanger sound development. It takes a firm stand in advocating and urging measures which it believes are in the interest of fundamental progress.

Looking back through the JOURNAL's editorial pages in the light of present knowledge gives impressive evidence of its influence in the industry and the soundness of its counsel.

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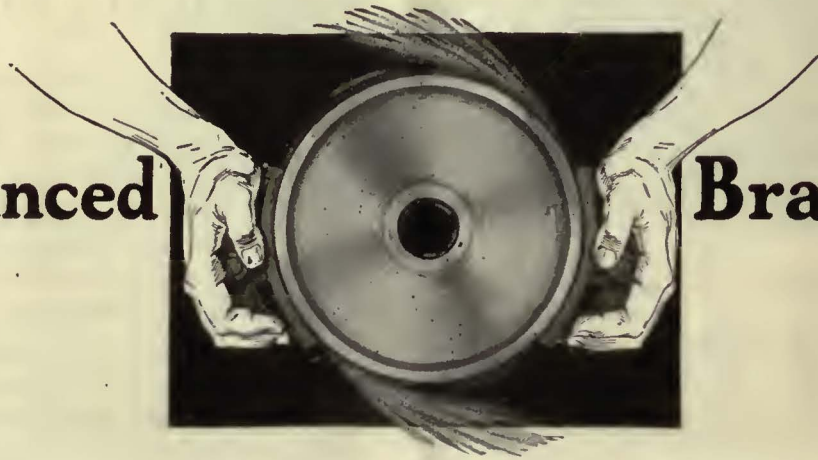


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Double the Braking Area—

Double it—and you decrease over 50% the required energy absorption per brake shoe.

Double the braking area and you greatly increase the friction coefficient.

Double it and you can attain a higher rate of retardation.

Double it and you decrease the frequency of brake shoe replacements.

The "SIMPLEX AND AMERICAN MULTIPLE UNIT" clasp brakes with two brake shoes per wheel instead of one, doubles the braking area and accomplishes these results.

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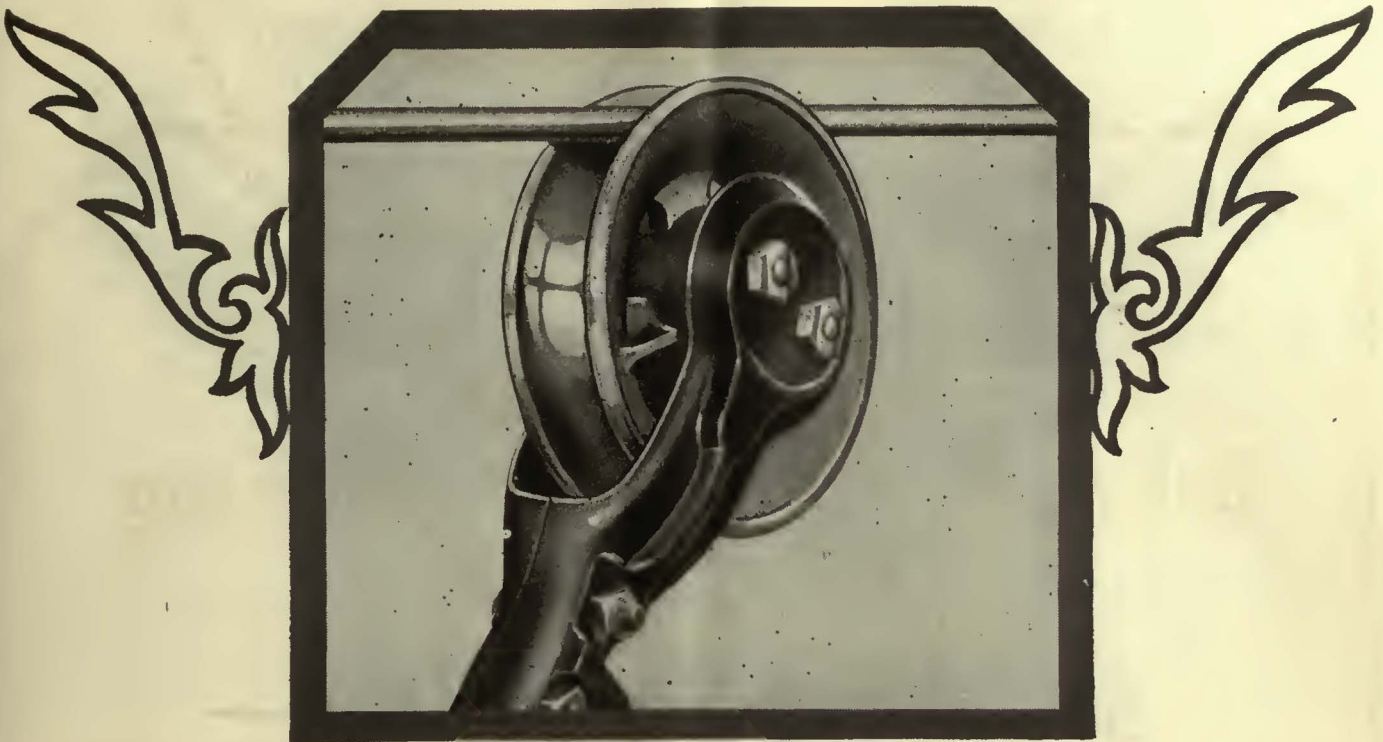
NEW YORK

CHICAGO

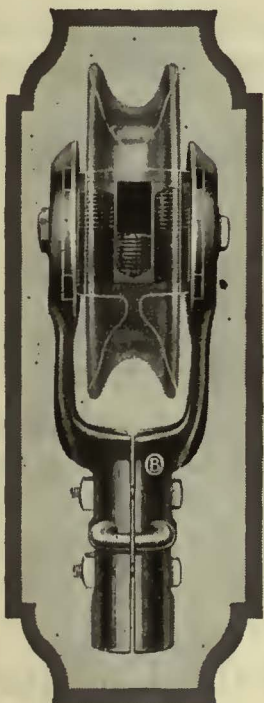
ST. LOUIS

American Multiple Unit Clasp Brake





Runs 18,000 Miles Plus—With Less Wear on Overhead—No Upkeep



Phantom View
OB Wheel and Harp

AVERAGING 18,000 miles—with records of 25,000 to 30,000 miles not unusual—OB Feist Trolley Wheels out-wear two to three wheels of conventional design and construction.

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Both the Master Mechanic and Line Superintendent will be interested in Folder 25-C which gives a full description. Sent free on request.

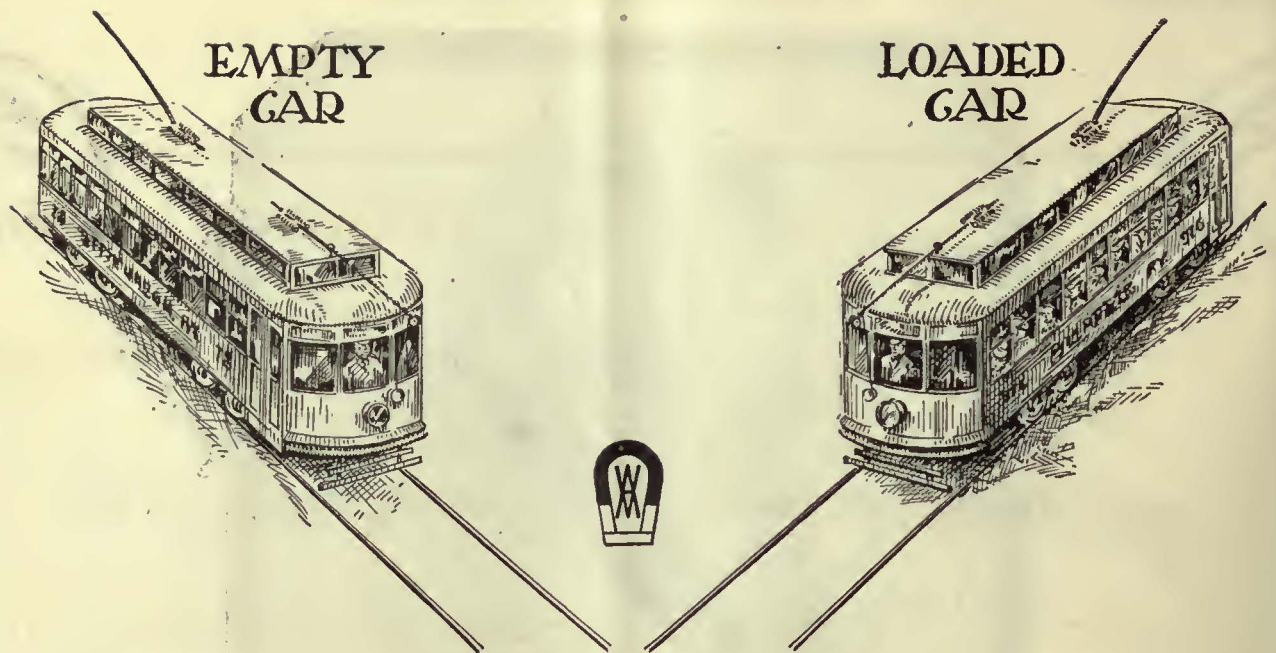
Ohio Brass Company, Mansfield, Ohio
Dominion Insulator & Mfg. Co., Limited
Niagara Falls, Canada

144C

Ohio Brass Co.



PORCELAIN
INSULATORS
LINE MATERIALS
RAIL BONDS
CAR EQUIPMENT
MINING
MATERIALS
VALVES



Stabilized Stopability—

—throughout the entire range of car loading means—

—safe and swift car movement, through congested districts;

—ability to hold traffic position with other moving vehicles, inasmuch as peak speed can be held longer between stops;

—a precise and systematic movement of shopping and business crowds;

—seconds saved, that may collectively be counted as dollars;

—stimulation of public good will, through a gratifying on-schedule record over the entire system.

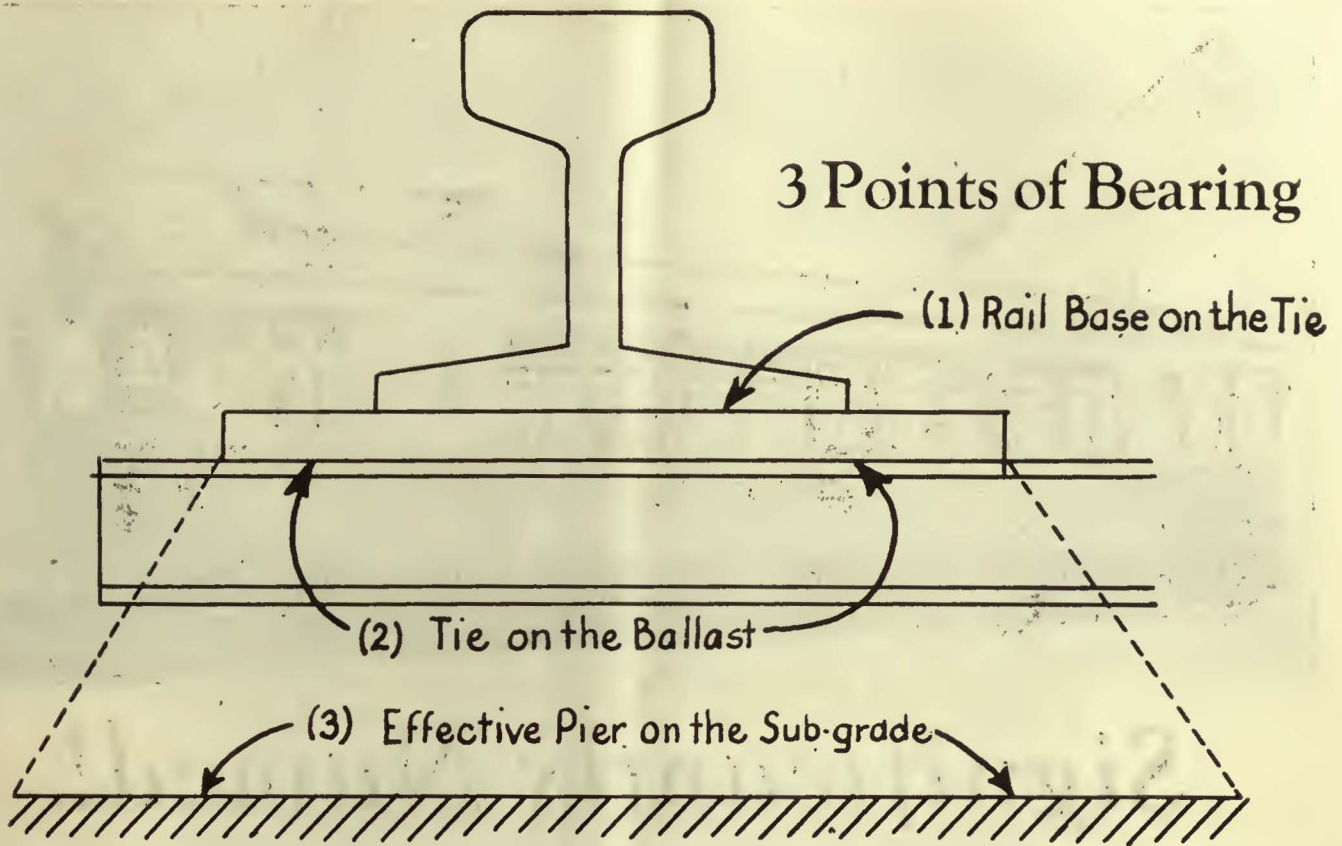
Many traction companies, recognizing the auspicious part Westinghouse Variable Load Brakes can play in effecting these far-reaching advantages, are specifying this new type equipment for their modern light weight cars.

Information regarding Westinghouse Variable Load Brakes may be obtained upon application to our nearest district office. Ask for Descriptive Catalogue T-2045.

Westinghouse Traction Brake Company

General Office and Works: Wilmerding, Pa.

WESTINGHOUSE TRACTION BRAKES



Check These Three Bearing Points

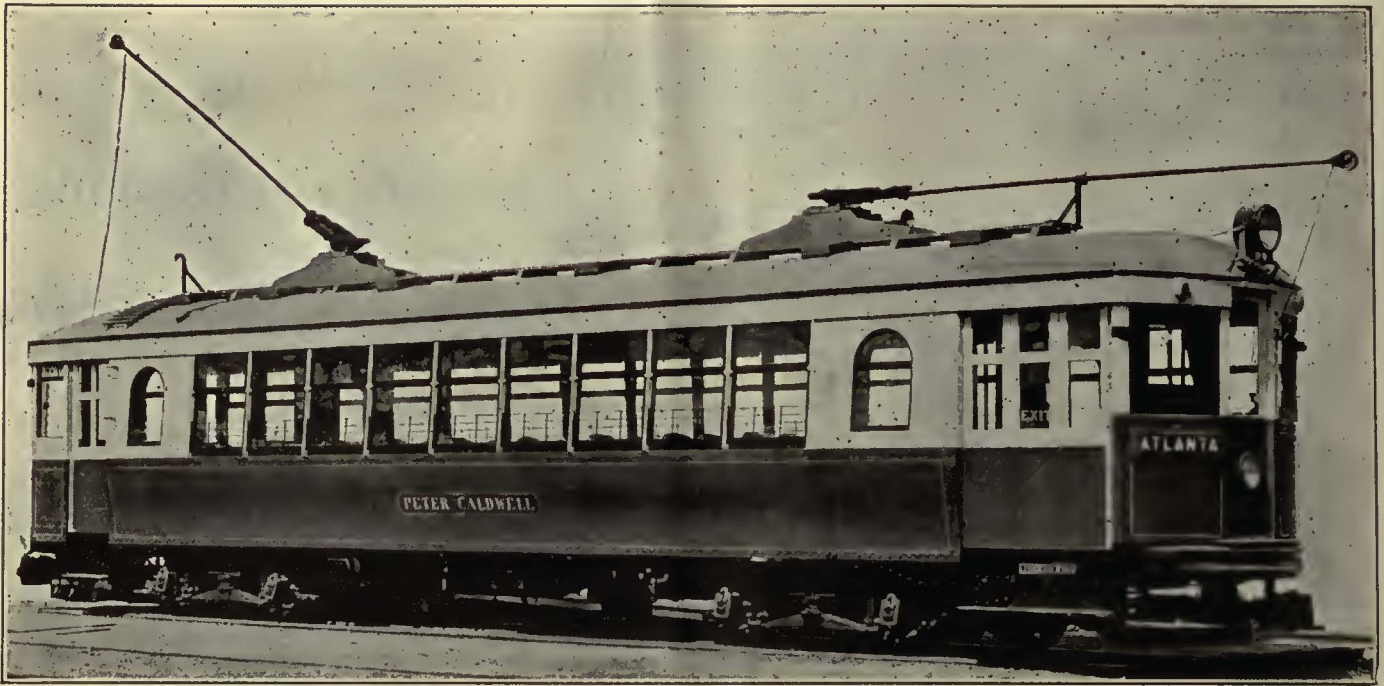
STEEL Twin Ties are well known for their large effective bearing, a feature of their efficient design and the secret of the long life, low initial cost and success of this construction. Notice and use for comparison the actual figures of Twin Tie Bearing in the table on the left.

Twin Ties on 6'0" Centers	Square Inches
(1) Rail Base on Tie (assumed 6" base)	216 50% Rail Base Supported
(2) Tie on the Ballast	936
(3) Effective Pier on the Sub-grade	2700

The International Steel Tie Company
Cleveland

Write today for catalog, detailed cost figures from many installations and delivered price on Twin Ties.

Steel Twin Tie Track



Significantly Named!

The ten high class interurban cars recently put into service by the Georgia Railway and Power Company on their Marietta and Stone Mountain lines were named, by popular vote of patrons, to memorialize citizens who had been outstanding in the development of the territory served by the two lines.

By nature these cars have another distinctive name common to them all; they are called SAFETY CARS. Their character corresponds to that stipulated by the A.E.R.A. definition: "Any car equipped with adequate safety devices for one-man operation."

We make the Safety Car Control Equipment which makes the Safety Car.

Safety Car Control Equipment interlocks the power, brake, and door control functions to combine ease and convenience for centralized operating responsibility, while providing assurance of adequate safety.



SAFETY CAR DEVICES CO.
OF ST. LOUIS, MO.

Postal and Telegraphic Address:
WILMERDING, PA.

CHICAGO SAN FRANCISCO NEW YORK WASHINGTON PITTSBURGH



Added attractiveness obtained with de luxe type lighting fixtures

In days gone by an electric railway car was merely a car—a conveyance in which people rode because there was no alternative.

Nowadays, competition has educated people to select a conveyance that not only gets them somewhere but is also attractive.

To help improve the appearance of electric railway cars the newly designed *Dome Type* Safety Car Lighting Fixtures give a luxurious Pullman effect.

These fixtures have beautiful Druid glass bowls which produce a soft, pleasing well-diffused light. Substantially made to withstand extreme vibration, these fixtures use 94 watt lamps and compensated circuit.

Full particulars gladly sent on request

ELECTRIC SERVICE SUPPLIES Co.

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PITTSBURGH	BOSTON	SCRANTON
1123 Bessemer Bldg.	88 Broad St.	316 N. Washington Ave.
		DETROIT
		General Motors Building
Lyman Tube & Supply Co., Ltd., Montreal, Toronto, Vancouver		

SNOW!

Sure to come!



Get ready now—check up on your snow-fighting equipment for the coming winter

The standard single truck, steel underframe, long-broom sweeper is exceptionally strong and rigidly built, handling deep snow rapidly without stalling. The long broom clears both rails and fifteen inches additional on the outside of each track. These sweepers are equipped with case-hardened roller bar detachable-link steel chains of 28,000 lbs. tensile strength.

McGuire-Cummings Single and Double Truck Snow Sweepers and Plows are "Standard Equipment" on practically every Electric Street Railway Line in the United States and Canada that has snow to contend with.

CUMMINGS CAR AND COACH COMPANY

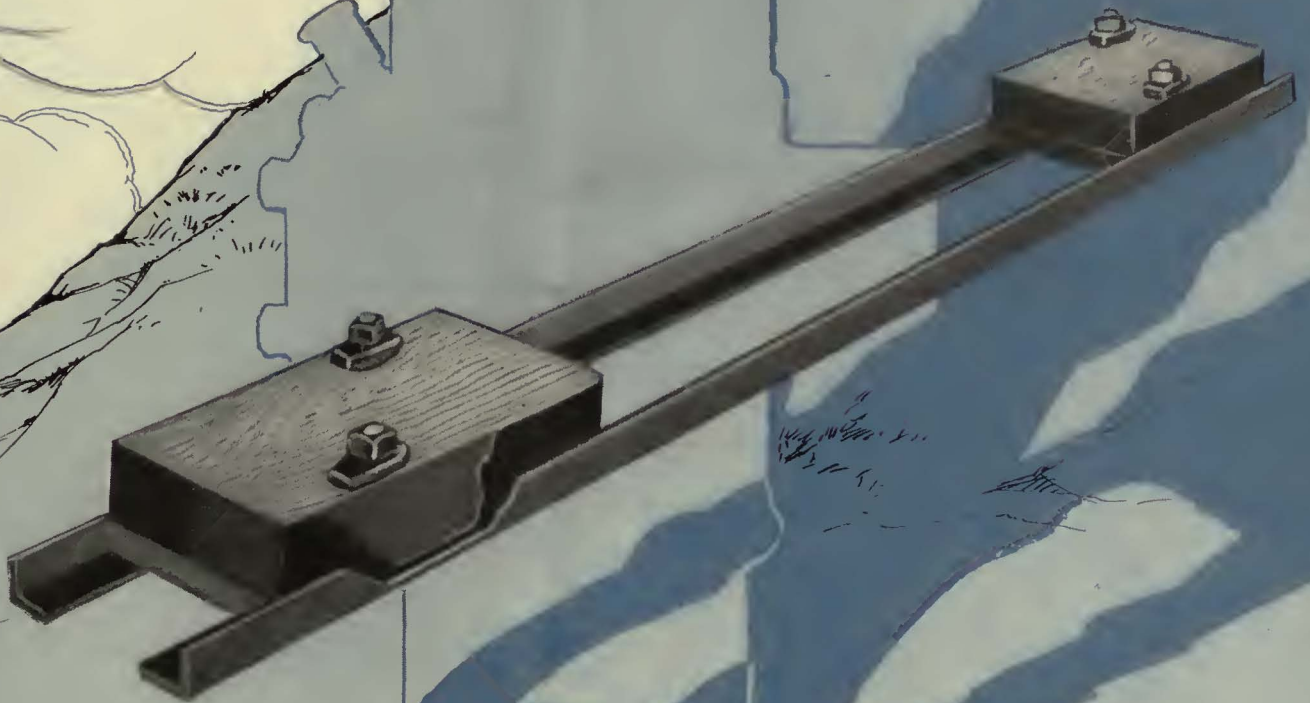
Successors to McGuire-Cummings Mfg. Co.

111 W. Monroe St., Chicago, Ill.

Light Weight City and Interurban Cars

Single and Double Truck Snow Sweepers and Plows

Shock Absorber Track With Dayton Mechanical Ties



ALL OVER THE NATION -
DAYTON TIES

*The Dayton
Mechanical Tie Co.*
DAYTON, OHIO

Shock Absorber Track With Dayton Mechanical Ties

THE WEARING QUALITIES of track depend not so much on the rail, but on that which holds the rail up.

Sleeper or ballast must have resiliency enough to absorb the shocks of traffic, or rolling stock will be pounded to pieces and the track broken down.

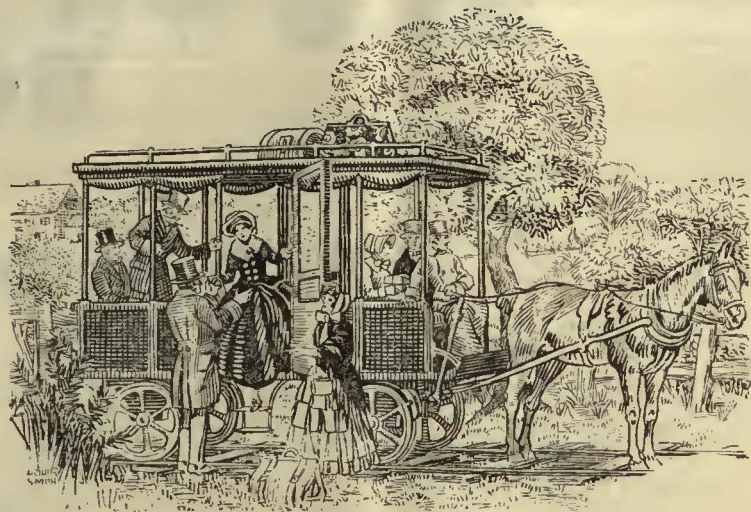
In the case of street railways, the concrete ballast is rigid, and the resilience must be obtained in the tie.

Dayton Mechanical Ties furnish this resiliency through a confined asphalt cushion upon which rests a white oak block. While it does not permit a perceptible up-and-down movement, this resiliency is ample to absorb all the shocks and pounding. As a result, track laid on Dayton Ties stays in perfect condition for years—with ridiculously low maintenance.

Such tracks are considerably less noisy, and repairs on rolling stock running over it are reduced to a minimum.

There is a real story for you in Dayton Mechanical Ties—*send for it today.*

***The Dayton
Mechanical Tie Co.***
DAYTON, OHIO



Time to Spare

TRAVELING by horse car was so slow that a few minutes spent in boarding or alighting did not matter one way or the other. In modern railway service, however, boarding and alighting time is an important factor in the operating schedule. Seconds saved by National Pneumatic Door and Step Equipment at each stop mount into extra car miles every day.

NATIONAL PNEUMATIC COMPANY

Executive Office, 50 Church Street, New York

General Works, Rahway, New Jersey

CHICAGO
518 McCormick Building

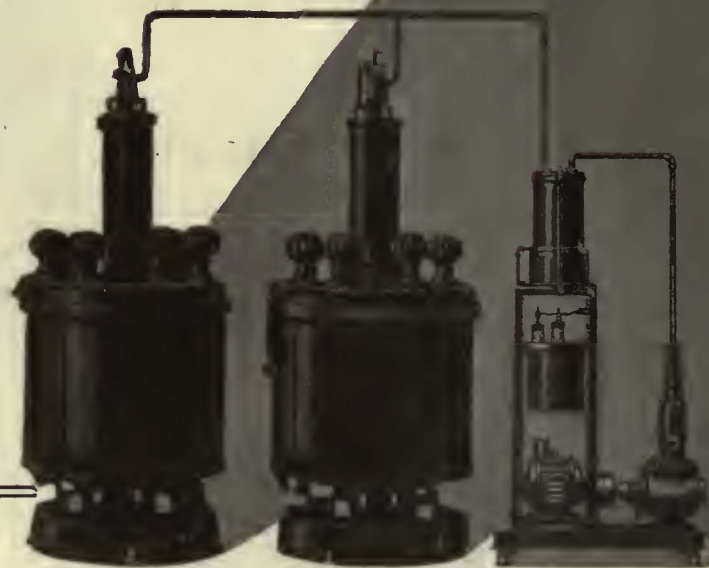
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Railway & Power Engineering Corp., Ltd.

PHILADELPHIA
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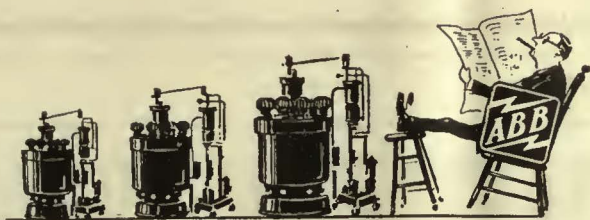
American BROWN BOVERI

2. Simple operation --- and



Principal Products

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| Mercury-Arc Power Rectifiers
(steel enclosed) | Rotary Converters | Steam Turbo Generators for
normal or high pressures | Electric Furnaces |
| Electric Locomotives—for any
system of current, high or
low tensions | Motor Generators | and superheats | Induction Regulators |
| Complete equipment for rail-
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| | Mining Locomotives | Condensers and Auxiliaries | Diesel Driven |
| | Switches, Controllers and all
Auxiliary Equipment | Relays | Turbines Driven |
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Mercury-Arc Power Rectifiers

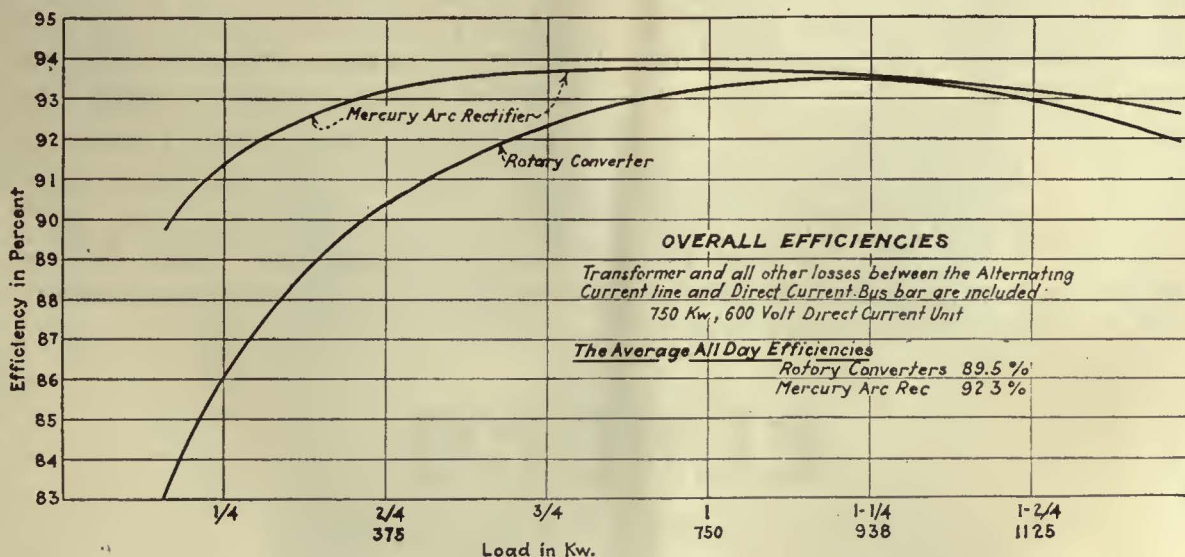
minimum attention!

Chief Advantages

1. Efficiency high over the whole working range.
2. Simple operation and minimum attention.
3. No synchronizing.
4. Very high momentary overload capacity and insensibility to short circuits.
5. Negligible maintenance.
6. Low weight. No special foundations.
7. Noiseless and vibrationless operation, consequently rectifier substations can be erected in densely populated localities.
8. New sub-stations need only be of light construction. In many cases old houses can be converted, while the plant can often be erected in places that could not be considered for rotating machinery.

Especially adapted to electric railway conditions, where automatic, laborless substations are employed as a matter of financial necessity. Mercury-arc power rectifiers can be furnished in units of any size up to 3000 kw. capacity. They have no moving parts other than small auxiliary apparatus.

American Brown Boveri Electric Corporation
 165 Broadway, New York, N. Y. Camden, New Jersey
 230 South Clark Street, Chicago, Illinois



AMERICAN BROWN BOVERI



Modern Equipment Necessary To Prosperity

The day is past when street railways can get by with dingy old cars, bad tracks, and feeder lines supported by unsightly poles.

Competition by other modes of travel has grown too keen. Improvement in physical property is an absolute necessity to hold public approval.

The sturdy, lasting quality of Elreco Steel Poles impresses upon the public

the worth of the line using them, and adds to public confidence. Such confidence is always reflected, both in the fare box and in the stock market.

Elreco Combination Steel Poles will carry all electric wires, as well as street lights when necessary.

Let us tell you more about Elreco Poles. Send for catalogue and specifications.

ELRECO

POLES

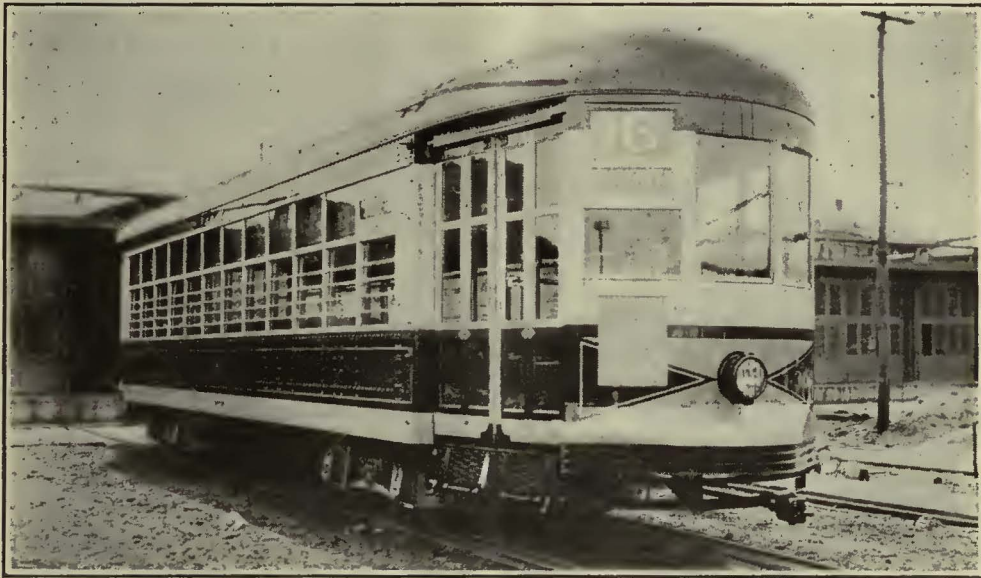
The Electric Railway Equipment Co.

CINCINNATI, OHIO

New York Office, 30 Church St.

Memphis Street Railway

—installs New Modern Cars—
—stream line painting and plush upholstered seats



32 of these new cars just delivered
to Memphis Street Railway by the
Quality Shops



Further particulars on request

St. Louis Car Company
St. Louis, Mo.

“It absorbs vibration,



H. C. Benagh, Engineer of Maintenance of Way for the Nashville Railway & Light Co., Nashville, Tenn. Mr. Benagh has had long experience with electric railway engineering problems, and is a recognized authority in the South.

and protects the pavement"

says H. C. BENAGH

"IN the construction of a T-Rail track along a paved street—especially where the wearing surface is asphaltic—the flangeways are the weak points in the pavement." That is the view recently expressed by H. C. Benagh, Engineer of Maintenance of Way for the Nashville Railway & Light Co., Nashville, Tenn.

"The dust and dirt accumulating in these flangeways are packed and crushed downward into the wearing surface. This causes a rupture of the street paving, and rail vibration tends to make the situation worse.

"The harmful effects, we find, can be greatly minimized by installing an asphaltic rail filler along the rail. This resilient compound forms a most satisfactory flangeway. And in addition, it absorbs the shock and vibration to a large extent. Thus, in both ways, it protects the pavement contiguous to the rails."

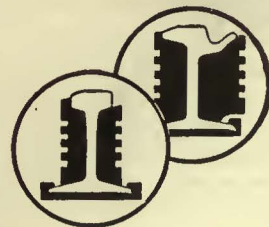
Over 12,000 feet of Carey Elastite System of Track Insulation have been installed on the lines of the Nashville Railway & Light Co. with results that are highly satisfactory to the Company. The mastic compound of asphalt and fibre used in the Carey System comes in preformed slabs to fit any rail. Easily driven into place. And the small cost of installation is quickly regained by savings effected in maintenance. Write today for full details.



A section of the track of the Nashville Railway & Light Co., Nashville, Tenn. This track is cushioned with Carey Elastite Rail Filler.

THE PHILIP CAREY COMPANY, Lockland, Cincinnati, Ohio

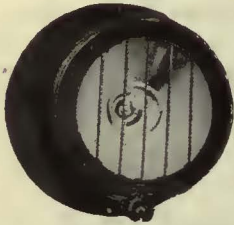
Carey
Elastite
 TRADE MARK REGD. U.S. PATENT OFFICE



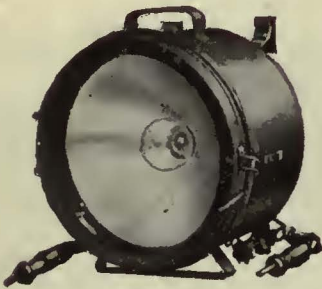
SYSTEM OF
TRACK INSULATION



Form J34—For city service, where streets are brightly lighted, this G-E Headlight is recommended. It gives ample illumination for operation at switch-points and crossovers.



Form J59—A less powerful headlight than the J-63, designed for suburban service where a range of 400-500 feet of illumination is sufficient.



Form J63—A powerful projector for high-speed interurban lines where an intense beam is required for private right-of-way.



Come to Headlight Headquarters

Naturally, electric railways turn to General Electric for the latest and most satisfactory developments in headlights.

As specialists in illuminating problems of every kind, G-E engineers have co-operated in every step of lighting progress. G-E Headlight design has necessarily progressed with this activity.

In G-E Incandescent Headlights today you will find incorporated the fundamental principles of illuminating science, plus every modern refinement that both time and experience have brought forth.



Include headlights with the other car equipment that you specify "shall be General Electric". You thereby take advantage of General Electric's experience with problems of illuminating engineering.

GENERAL ELECTRIC

Electric Railway Journal

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

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

Volume 68

New York, Saturday, August 28, 1926

Number 9

Cleveland Program

Presages Meetings of Value

EVERY railway man, no matter what his position in the industry, will find interest in the program for the Cleveland Convention of the American Electric Railway Association, published elsewhere in this issue. "Unified Transportation Service in the Public Interest," the general topic for the opening session, may well be said to characterize the entire program. It is indicative of the growing conviction that success in transportation is dependent on an honest endeavor to serve the public with the best facilities and methods that can be obtained.

It will be noted throughout the program that the movement begun last year to subordinate committee reports so as to give more time for discussion of vital topics has been extended. The reports are now being distributed to the members. They should be studied with care so that each individual interested in a particular topic will be prepared to discuss it intelligently rather than to listen to a detailed reading of the report on the convention floor. The change has already done much to increase interest in the meetings, and as it is used more its value will become even greater.

The General Manager

Threw the Switch

IT WAS a small single-track interurban property on which the general manager was in the position of a man trying to plug, with his fingers, a hundred holes in a leaking bucket. He needed money for improvements. He had severe bus and automobile competition. His track was none too good. His public was on the whole disinterested in his troubles.

But he had implicit faith in the railway. By his very enthusiasm he had raised the money for a down payment on spick and span new cars. He was determined to make his service superior to any other form of transportation in his territory. He was trying to build into his service the "pep," "snap" and "enthusiasm" that the public wanted. Since he realized that in improved service alone lay his salvation, he was intent on speeding up his cars, keeping them on time and building enthusiasm in his men.

On a particular day he was riding one of his new cars—and he rode them frequently at all hours of the day and night. The car was comfortably loaded with passengers as it approached a turnout to make a "meet." Bill, the one-man operator, slowed down preparatory to throwing the switch. He was apparently in a hurry, for the schedule was "tight." But before he could bring his car to a complete stop the general manager arose from his seat and hopped off the front end. That manager ran ahead and threw the switch before the car reached it. "Let's go, Bill," he sang out as he swung aboard again. The car picked

up speed rapidly and was soon under way to the delight of its passengers.

The incident may seem insignificant and the general manager's action unbecoming his position of responsibility. But after all the force of example is greater than any precept. Enthusiasm is communicable. In the common task of serving the passengers on that car the manager joined Bill in practicing what he preached.

Exhibit Your New Car at Cleveland

FACILITIES for the exhibit of electric railway cars during the annual convention in Cleveland are better this year than they have ever been at any former convention. Twenty-five hundred lineal feet of track space with convenient connection to steam railroads and to the surface rails of the Cleveland Railway are being provided. The exhibit committee has made a special effort to encourage and foster a showing of the progress made during the past year in improving the vehicle in which electric railway rides are sold.

This is in line with the car improvement program that is rapidly gaining momentum in the industry. Reservations for space both by manufacturers and operating companies have been made to an extent which indicates that this will be one of the most impressive car exhibits held in many years. To the car builder it offers the opportunity of capitalizing on the progress made during the year. It is unquestionably good business for every builder to be represented adequately.

But there is also a good reason for operating companies to co-operate by sending cars to Cleveland. By thus helping to make the exhibit truly representative of the best that has been done during the year, there will be an opportunity for critical comparison of designs. Every operator will benefit through the stimulus thus given to progress. Now is the time for the industry to put its best foot forward. Send one of those new cars to Cleveland!

Merchants Have a Direct Interest in Traffic Congestion Relief

ONE phase of vehicular traffic congestion is the danger to big city stores in the fact that residents of outlying districts are doing more of their shopping locally. This situation is giving much concern to merchants in metropolitan centers, where advertising of stores in some of the outlying districts occasionally amounts to one-third as much as that done in the main shopping area. In some of the largest cities, downtown merchants are endeavoring to offset this competition by establishing branch stores in sub-centers. They have been forced to realize that growing vehicular traffic has not only diverted business to other locations, but has added much to the cost of the business which they still hold. One prominent merchant has been quoted

as saying: "If merchants do not do something to relieve the present traffic situation, within fifteen years there will be no downtown shopping districts of any importance."

While merchants and bankers as well as property owners in downtown centers might well look with concern on the fast development of rival business in outlying districts, local transportation interests should also be looking ahead as to what this development means for them. Will it avoid the necessity of car rides to get people to their shopping districts? Will they walk to neighborhood stores of all kinds as they now do to local movie shows? Or, on the other hand, will the sub-center stores attract more short riders and thus prove a boon to the railway companies?

Store patronage will follow the line of least resistance. Traffic will follow that patronage. The result of decentralization, therefore, will be a shifting of the congestion problem to the various local centers to which business was transferred in the hope of finding relief. Moves of this kind probably will bring only temporary help. This prospect should bring together business interests and transportation executives in a common effort to plan a solution which will serve both to best advantage.

Public Recognition of the New Spirit of Salesmanship

ARTICLES like one on the Pittsburgh railway situation, published in the *National Municipal Review*, must eventually redound greatly to the credit of the industry. So far as electric railway men are concerned there is nothing new in the presentation, but it is ably done by the author, Charles K. Robinson, a member of the Pittsburgh Bar. He has taken old material and worked it over in an orderly and readable way that carries conviction. This in itself is art.

Mr. Robinson attributes the accomplishments at Pittsburgh to "a new spirit of management and salesmanship." Those seven words really tell the whole story. It just happens that Pittsburgh is the first of a proposed series, so that others in the railway industry who are making this phrase their watchword need not feel jealous at the selection of the Coffin winner of 1925 over them. They may be in line for treatment in the future and not know it.

The picture of the past painted by the author is not an ennobling one, but the past had to be gone over merely to point the way to the present and the future. The story of Pittsburgh is too well known to the industry to attempt to tell any part of what Mr. Robinson has said. Important as are his remarks, their significance to the industry lies in their presentation through the medium he chose rather than in their context. Particularly significant is the recognition on the part of the editor of the *Review* in his brief editorial comment to the effect that the nickel fare is little more than a memory and that to-day the important thing is adequate service at a reasonable rate. In this respect, to use his own words, the editor says that his series begins "with Pittsburgh, where better service plus a desire to please has done the trick."

It has "done the trick" there and it is doing it in many more cities. Moreover, this recognition is growing. The oftener the story is told the more frequently will citizens of other places be likely to grow introspective and to inquire to what extent they themselves may

be responsible for any difference in standard between what they enjoy and what others enjoy. When they do that, they are on a fair way to the settlement of the problem. As the *JOURNAL* for Sept. 26, 1925, said: "It is the privilege of the people to demand better and better service, and for it theirs is the obligation to pay." That means an adequate but not an onerous fare under conditions of operation in which the mutual dependence of the railway and the community is recognized. That has been the basis of Pittsburgh's progress.

Universities Can Help Promote the Science of Transportation

ADEQUATE transportation is a vital factor in the prosperity of this country and requires the services of a large number of persons, yet comparatively little attention has been given in the past to determine the best methods of training men to engage in this industry. Fortunately, under the bequest of Lord Strathcona, a pioneer railroad builder in Canada, Yale University has been placed in a position to undertake study along this line. As a preliminary the university recently authorized what is probably the most comprehensive survey of all work of this kind being done by universities, transportation agencies and others in this country. This survey has just been finished by Messrs. Topping and Dempsey, holders of Strathcona Memorial Fellowships in Yale University, and contains, in addition to the survey, recommendations of what the universities can do in the way of courses of study and research in transportation.

Those in charge of the investigation are under no uncertainty as to the need of adequate preparation on the part of those who will be called upon to conduct the transportation enterprises of the future. They also believe that in this preparation the universities can assist, just as they are now doing in other professions, such as engineering, law and medicine, and that this service need not in any way conflict with such other training conducted directly by transportation and equipment companies. Indeed, the report gives as much, if not more, consideration to the courses and research conducted by these corporations than to those at present being given in the universities and in technical and vocational schools. Electric railway transportation is considered extensively in the report, and it is satisfactory to learn that at least some electric railway companies have fully realized the necessity for conducting courses for apprentices as a logical preliminary to securing competent men for responsible positions in the organization.

Obviously, research also is a field in which the universities can be of assistance to the transportation companies. There are many questions, the survey declares, to which unbiased study by a body of scientific research workers, especially with the co-operation of the carriers, can bring most satisfactory replies.

Considerable skepticism was met among railway men during the survey, as to the ability of the universities to help much in the way of training men for transportation positions. The business is one, they said, that can be learned only on the job. The universities cannot turn out transportation specialists. The necessary knowledge can be acquired only in practical work. All this may be very true. But the same statement can be made with equal force of young men preparing for other careers.

Unquestionably, there are great opportunities in the field of local transportation where the universities can do valuable service. The transportation companies of the future will need all the assistance that they can get from men trained in economics, sociology and engineering. The Yale survey points the way in which scientific thought can help to make better transportation in the future. As courses are developed at the universities, they should receive the cordial support of electric railway companies.

For Those Who Swell and Those Who Grow

CRITICAL, indeed, of corporate statements intended for public consumption is Professor Ripley in an article "Stop, Look, Listen!" contributed by him to the *Atlantic Monthly* for September. Still the dissertation is shot through with strains of praise, and the utilities come in for much of this as well as some of the sarcasm. It is the Ripley of old that is functioning, the Ripley whose works on the railroads are classics, the Ripley who ponders well what he writes before he essays the task. But that is not the point. It is in the substance of his remarks rather than in the vehicle that the **ELECTRIC RAILWAY JOURNAL** is concerned.

It would be impossible even in a cursory way to consider here all he says. Much less would it be possible to pass upon the applicability of some of the remedies he suggests with respect to extension of the jurisdiction of the federal trade commission in the domain of the so-called industrials. He is on safe ground when he criticises the annual report that is ornamental rather than orderly. Of course, reports of the utilities are all on file with their state commissions in detail and in standard form, but that is no excuse for the inadequate annual statements rendered by many of these companies. As recently as the issue of May 8, **ELECTRIC RAILWAY JOURNAL** in a somewhat liberal characterization said that after all an annual report, just like a person, should not be ornate at the possible sacrifice of substance. Certainly the lack of uniformity in utility reports as rendered to the public greatly reduces their value for purposes of comparison. This is quickly borne in upon anybody who has attempted any statistical studies with the printed report as the only source of his material. It is difficult to be specific in comment of this kind, keep within bounds, and stimulate or even sustain the reader. This Professor Ripley does. His strictures are for the most part well deserved, and every financial editor whose duty it is to digest company statements will undoubtedly be inclined to agree not, perhaps, with all his suggested remedies but with his ideas with respect to what is essential in financial statements.

The needs which the Professor emphasizes are growing and the forms of reports which he commends, such as the excellent one of the Philadelphia Company, to mention just one, certainly are a most valuable publicity medium entirely aside from their practical value. "Stop, Look, Listen!" certainly is a provocative article. This is not the first time that Wall Street and the country at large have heeded Professor Ripley. His comments certainly will appeal to "the men who grow," and if they will condescend to stick with them to the finish, his remarks should prove helpful to "those who merely swell with the advance of the years."

A Major Process Often Has Valuable By-Products

SALESMANSHIP of transportation as developed on many modernized properties often has valuable by-products that cannot readily be calculated in advance. If the process of training car operators as salesmen is successful in its direct accomplishments, it is well enough worth the time and effort of property managers. But when applied to accomplish special results it adds a crowning touch to such efforts.

About 30 men of the transportation department of the Pennsylvania-Ohio lines organized and made a mass attack on property owners and in two days secured practically all the necessary easements for the steel towers of a new 40-mile transmission line. Prolonged and expensive delays to a necessary extension of facilities were thus obviated.

Enough that these men are better salesmen of securities. But here is tangible evidence of the additional advantages of salesmanship teachings. What man will not attack his daily job with greater spirit when he feels the essentiality of his being a part of such an organization?

Charging Depreciation on Undervalued Properties

OF SERIOUS import is the problem raised in the determination of depreciation charges for railways that have been transferred to new owners at prices below their intrinsic value. The basis on which the depreciation shall be calculated, and the rate which may be charged, may determine the success or failure of the enterprise if the new owners desire to give a continuing service. Such a situation has arisen in the case of the Jamaica Central Railways, Inc., of Queens Borough, New York City, the details of which are given in an article in this issue.

This railway was sold by the receiver at a price of about one-fourth its appraised value on a depreciated basis. For a time service was suspended. After a while the new owners decided to rehabilitate the system and resume operation. In setting up the accounts it was found that the rulings of the utility commission required charging off depreciation on a basis of nothing greater than the purchase price. This, of course, precluded the accumulation of a sufficient reserve to cover the continual reduction in real value of the road and its equipment due to depreciation.

The engineers who investigated the situation found that the average life of the elements of the property is only about six years. On the basis of the highest charges which can be set up, the property would have to last an average of about sixteen years before even its present-day depreciated value can be accumulated. When the cars and track are worn out a few years hence, heavy financing will be needed. Meanwhile, provided the fares are adequate to cover the costs of service on the basis prescribed, the car riders will be paying less than the true cost of the service.

Unless owners are allowed to set up enough reserve for depreciation in such cases as this, it is difficult to see how service can be continued in many communities where properties have been transferred for less than their worth. The industry and the regulatory bodies can well afford to give the problem the most serious consideration.

Medical Survey in Fort Worth Has Raised Health Standard of Employees

Northern Texas Traction Company, Employing 610 Men Exclusive of Temporary Workers, Follows Closely the Health of Employees—461 Men Re-examined in 1925 and 360 During the Preceding Year

HEALTH and the pursuit of happiness have been fostered in Fort Worth by the Northern Texas Traction Company for many years. The physical condition of employees is under surveillance from the time of the rigid examination upon application for a position with the company until a separation occurs. The re-examination offered these men and urged upon them is perhaps one of the most important humanitarian accomplishments that industry can offer. Maladies in their initial stages are thus discovered and corrected whenever possible, thus extending the years of useful life and often avoiding the misery of a sickly old age.

Following the re-examination of employees, corrective measures are recommended that have aided materially in raising the classification, even though because of the low yearly turnover the average age of employees has increased from 35 years to 39 years in a period of about four years. Over 90 per cent of all employees have been with the company five years or more, and 11 per cent have been in service twenty years or more.

Before the group reinsurance in outside companies was discontinued the work of the medical staff was so successful that a total reduction of 30 per cent in the reinsurance premiums was obtained because of the high health record on the property. The discontinuance of group reinsurance is only experimental and the company is not committed to continue this policy.

All employees, except colored and temporary men, are required to belong to the Mutual Aid Society, for which \$1 per month dues are collected, the company contributing a like amount. Returns to the employees are in the form of sick benefits amounting to \$2 per day for a total of 120 days, and \$1 per day for 60 additional days, making a total of \$300 possible benefits for any one sickness or accident. No benefits are paid for less than seven days. Illness and accident payments begin after the seventh day, although payments up to the first day of illness are retroactive. In addition, employees are allowed \$15 a week hospital benefits in case hospital service is necessary.

Free medical attention is furnished to all employees without additional charge, and this attention includes all illness or accidents as well as major operations. Any prescription for drugs which the employee requires is also filled without additional cost to him. A death benefit of \$500 is allowed to any employee of less than six months seniority, and after six months this becomes \$1,000.

The primary value in the light of real accomplishment arises from the periodical examination of employees that is urged upon all men and women in the

PHYSICAL EXAMINATION			
Working Diagnosis		CYNCOLOGICAL	
General Condition		Temperature	
Temperature	Height	Weight	Uterus
Pulse Rate	BP. S	D	Uterus Size
Respiration		Nutrition	Uterus Position
HEAD AND NECK			
Face	EYES		
Tooth	Ears		
Cervical	NOSE		
Thyroid	MOUTH		
Trachea	PHARYNX		
Color	LARYNX		
CHEST	BRONCHI		
Inspection	LUNGS		
Dullness	HEART		
Breath sounds	MURMURS		
Rales	PERICARDIUM		
Tamper	ABDOMEN		
CARDIO VASCULAR			
Cardiac Enlargement	LIVER		
Bounds of Apex	GALLBLADDER		
Pulse	SPLEEN		
Character	PANCREAS		
Number	ADRENALS		
Regular	TESTES		
Force	PROSTATE		
CHERRY	BLADDER		
Inspection	RECTUM		
Dullness	VAGINA		
Breath sounds	CERVIX		
Rales	VULVA		
Tamper	HYMEN		
CARDIO VASCULAR			
Cardiac Enlargement	TYPE		
Bounds of Apex	VARIATION		
Pulse	TRYPAN		
Character	APPROX		
Number	BONES AND JOINTS		
Regular			
Force			
CHERRY			
Inspection			
Dullness			
Breath sounds			
Rales			
Tamper			
BLOOD			
Quantity	SPUTUM		
Character	Color		
Consistency	Odor		
Microorganisms	Bacteria, etc.		
URINE			
Quantity	Character		
Color	Consistency		
Microorganisms	Bacteria, etc.		
FECES			
Quantity	Character		
Color	Consistency		
Microorganisms	Bacteria, etc.		
GASTRIC CONTENTS			
Quantity	Character		
Color	Consistency		
Microorganisms	Bacteria, etc.		
SPINAL FLUID			
Quantity	Character		
Color	Consistency		
Microorganisms	Bacteria, etc.		

THE COFFEY CLINIC
304 West Broadway, Fort Worth, Texas
PATHOLOGICAL LABORATORY RECORD

Name: _____ Address: _____

Room: _____

BLOOD

Quantity: _____ Character: _____

Color: _____ Consistency: _____

Microorganisms: _____ Bacteria, etc.: _____

URINE

Quantity: _____ Character: _____

Color: _____ Consistency: _____

Microorganisms: _____ Bacteria, etc.: _____

FECES

Quantity: _____ Character: _____

Color: _____ Consistency: _____

Microorganisms: _____ Bacteria, etc.: _____

GASTRIC CONTENTS

Quantity: _____ Character: _____

Color: _____ Consistency: _____

Microorganisms: _____ Bacteria, etc.: _____

SPINAL FLUID

Quantity: _____ Character: _____

Color: _____ Consistency: _____

Microorganisms: _____ Bacteria, etc.: _____

PATHOLOGICAL FINDINGS

X-RAY REQUISITION

Name: _____ Age: _____ Date: _____

Radiographic Examination of: _____

Fluoroscopic Examination of: _____

Diagnosis: _____

Remarks: _____

Physician: _____

ROENTGENOLOGIC AND FLUOROSCOPIC FINDINGS

Diagnosis: _____

Roentgenologist

Sample Blanks Used in the Examination of Northern Texas Traction Employees at the Coffey Clinic, Fort Worth, Tex.

A thorough initial examination of all prospective employees is required. These records shown above and on page 335 are kept in folders. Re-examination is urged on all employees and these further records with a notation of all incidental calls are recorded in the proper places on the permanent records of each man or woman employee.

EAR, NOSE AND THROAT RECORD THE COFFEY CLINIC

NAME _____ ADDRESS _____
 AGE _____ SEX _____ RACE _____ OCCUPATION _____

DIAGNOSIS _____
 COMPLAINT _____

EAR FUNCTIONAL TESTS:

WATCH	RINGS	SCHWABACH	WEBER	LOWTONE	C 4	SALTOUR WHISTLES
RT. EAR						
L. EAR						

TRANSMILLUMINATION: RT. NORMAL CLOUDY CLOUDY
 MAXILLARY SINUSES LEFT: NORMAL CLOUDY

NOSE: EXTERNAL: RT. NORMAL CLOUDY FRONTAL SINUSES LEFT: NORMAL CLOUDY
 SEPTUM: STRAIGHT-DEVIATED. RT. LEFT. PERFORATION
 TURBINATES: _____
 GROWTHS: _____

THROAT: TONSILS: RT. _____
 PHARYNX _____
 LARYNX _____

DATE	REMARKS	TREATMENT	DATE

EYE RECORD THE COFFEY CLINIC

RACE _____ ADDRESS _____
 OCCUPATION _____ DATE _____

EXTERNAL EXAM: R. E. LID _____
 L. E. LID _____
 TENSION: R. E. N. J. _____ L. E. N. J. _____
 LACRYMAL SAC. RT. _____ LEFT _____
 VISION: R. E. 20' _____ L. E. 20' _____
 PUPILLARY REACTION: R. E. L. ACC. _____
 L. E. L. ACC. _____
 WITH CORRECTION R. E. 20' _____ L. E. 20'

OPHTHALMOSCOPIC EXAM.
 R. E. CORNEA _____
 L. E. CORNEA _____
 DISC _____

THE COFFEY CLINIC 308 WEST BROADWAY, FORT WORTH, TEXAS

PATHOLOGICAL LABORATORY RECORD

NAME	ADDRESS

URINE		URINE	
Date _____	Acetone _____	Date _____	Acetone _____
Quantity _____	Diacetic _____	Quantity _____	Diacetic _____
Character _____	Indican _____	Character _____	Indican _____
Reaction _____	Bile _____	Reaction _____	Bile _____
Sp. Gr. _____	R. E. C. _____	Sp. Gr. _____	R. E. C. _____
Albumin _____	Pus _____	Albumin _____	Pus _____
Sugar _____		Sugar _____	
Cells _____		Cells _____	
Crystals _____		Crystals _____	

DATE	OFFICE	DATE	VISITS	DATE	DEBTS	DATE	MISC.

PERSONAL HISTORY

Name _____ Case No. _____
 Address _____ Data _____
 Doctor _____

Diagnosis _____
 Age _____ Sex _____ Race _____ B. M. W. yrs. _____

FAMILY HISTOY

Father	Mother	Brothers	Sisters	Wife or Children

Tuberculosis or Cancer history _____

CHILDHOOD DISEASES

Measles	Diphtheria
Mumps	Chicken Pox
Whooping-Cough	Measles
Scarlet Fever	Orchitis Epididymitis
Typhoid	Injuries

ADULT DISEASES

Smallpox	Fracture
Malaria	Diabetes
Pneumonia	Operations
Pleurisy	DISEASES OF
Rheumatism	Lungs
Influenza	Heart
Typhoid Fever	Stomach
Dengue Fever	Bowels
Infection	Kidney
Vaccination	Bain

HABITS

Smoke	Drugs
Chew	Sleeping
Coffee	Eating
Liquor	Yoursel

PRESENT ILLNESS

Chief Complaint _____
 Date of Onset _____
 Mode of Onset _____
 Cause _____
 Readache _____ Location _____
 Pain _____ Location _____
 Intensity _____ Type _____
 Referred _____ Reference to Males _____
 Reference to Menstruation _____

Measure

Yeasting	Character	Blood
Temperature		
Diarrhea		
Constipation		
Edema		
Shortness of Breath		
Narctaria	Pulsaria	Diarrhea
Treatment, if any?		

REMARKS:

MEDICAL RECORD

Name _____
 Address _____
 Entered Service _____ Left Service _____

BENEFITS PAID

DATE	CAUSE	DISABLED	RECOVERED	AMOUNT

SUBSEQUENT ILLNESS

Name _____ Date _____

Diagnosis	PROGRESS RECORD

PHYSICAL FINDINGS

The Forms Used to Record Medical Examinations by the Northern Texas Traction Company Give a Complete Record of the Physical Progress of the Employee. From This Record Corrective Treatment Is Prescribed and Incipient Chronic Illnesses Prevented

service of the company as a part of the free service of the Mutual Aid Society. In this way corrective treatment is applied to incipient diseases before they become chronic. The result is that of 271 men who were examined both in 1924 and 1925, 150 men remained in the same health classification for the second year, 76 raised their grade and 45 dropped into a lower classification. While re-examination is not compulsory, the results have been so gratifying that more men are be-

ginning to see the advantage of discovering incipient illness and correcting such troubles before they develop into a more serious condition.

Advantages to the Mutual Aid Society and the company are likewise obvious. A thorough examination before employment is required and this alone eliminates many undesirable prospects. This examination includes a thorough physical examination, special examination of eye, ear, nose and throat and laboratory tests of the

blood and urine. This is the same routine which is followed up in the annual medical survey. If these general tests indicate possible complications the prospective trouble is further investigated to the end that definite corrective measures can be applied.

Five classifications, from A to E, inclusive, are used. To be in class A requires practically perfect physical condition. Even filled teeth or slight troubles with the eyes, skin or throat will prevent an A classification. Of the eight men in this grade in 1924, only four could remain in 1925, because of a more severe standard required for this classification.

The complete classification of men examined in the years 1924 and 1925 are shown as follows:

Class	1924		1925	
	Men	Per Cent	Men	Per Cent
A	8	2.2	4	0.9
B	164	45.5	248	53.8
C	156	43.3	185	40.1
D	30	8.5	24	5.2
E	2	0.5	None	....
Totals	360	100.0	461	100.0

Of the 461 men examined in 1925, 271 had been previously examined in 1924 and the two years cover nearly all of the employees. It is seen that considering the group as a whole the number of employees in the higher classifications has been raised. The decrease in grade A is of little consequence. The increase of grade B and the decrease of C and D is of greatest importance in showing the increased average health conditions.

Further analysis of the physical condition of the male employees of the Northern Texas Traction Company shows the following defects observed in the re-examinations. These defects are divided into twelve classifications, as shown in the table in the next column.

This association of employees has full appreciation of the value of preventative medicine as taught them by Dr. Alden Coffey, who has been employed by it for the past eighteen years. The medical studies conducted through the co-operation of the Northern Texas Traction Company's employees and the enlargement of his

	Per Cent	Per Cent
	1924	1925
1. Eyes.....	13.6	8.7
2. Ears.....	11.7	9.9
3. Mouth.....	9.3	12.3
4. Nose and throat.....	21.3	12.2
5. Respiratory.....	0.8	0.1
6. Genito-urinary.....	7.0	12.0
7. Cardio-vascular.....	7.3	9.6
8. Digestive system.....	14.9	14.4
9. Nervous system.....	0.1	0.6
10. Skin.....	3.0	7.6
11. Mutilation and deformities.....	0.7	.8
12. Miscellaneous, hernia, etc.....	10.3	10.9
Total.....	100.0	100.0
Total men examined.....	360	461
Total defects.....	1,092	1,449
Defects per man.....	3.03	3.1

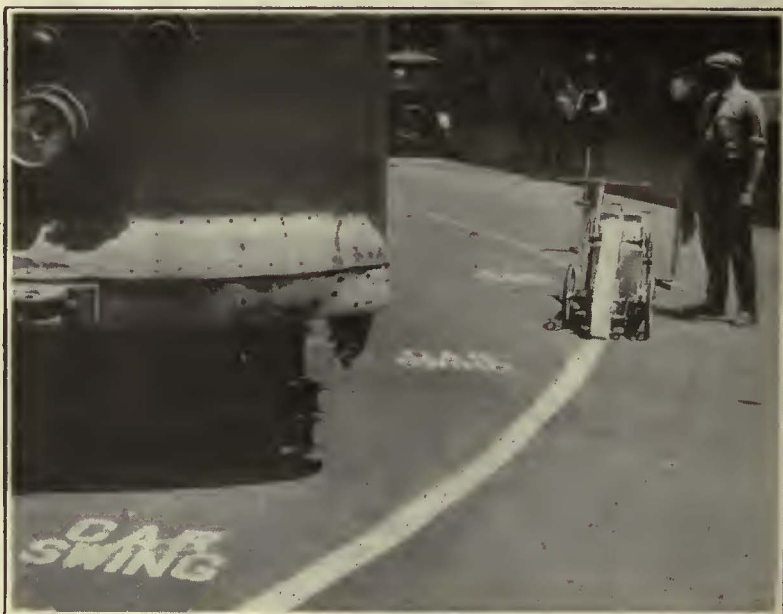
private practice has resulted in the equipment of a modern clinic and enlargement of the medical staff, which at this time includes five doctors, all specialists in various lines, with six additional men and women trained in laboratory and general clinic work.

This clinic is equipped to perform a general medical and hospital service except major operations, the surgical work being carried on at one of the local hospitals. It is planned to establish a dental clinic in the near future, but at the present time only dental examination is performed, including X-ray of teeth as well as of the body.

Traffic Lines Easily Marked in Youngstown

CLEARANCE lines on the streets of Youngstown denoting the swing of cars rounding the curves are quickly applied by the use of the machine illustrated. This road marker is manufactured by the Continental Products Company, Euclid, Ohio. The proposed line to be marked on the pavement is fully sketched out and the machine pulled along over this, automatically leaving a clean, white band in its wake.

The cost of the machine was divided between the city and the Youngstown Municipal Railway. The work of marking the bands on the streets is done by city forces aided by an inspector of the railway. The words "car swing" are stenciled on the pavement to warn motorists against getting too close.



Clearance Lines at Car Curves and Stenciled Signs on Pavement Warn Motorists in Youngstown, Ohio

At left is shown the device for marking swing lines used in Youngstown. This is a labor saver and produces a clean white band. At the right, traffic line marker at work showing the swing

line and the safety margin used in Youngstown, Ohio, by the Youngstown Municipal Railway. "Car swing" signs are painted by use of stencils.



At the Intersection of Washington and Market Streets, Newark, N. J. Buildings on the Southeast and Northwest Corners Were Demolished in Order to Eliminate a Bad Jog, Thereby Making Possible the Installation of a Diagonal Crossing and Permitting Through Railway Operation on Washington Street

Track Extensions Improve Transportation Facilities in Newark

Public Service Railway Has Spent More than \$300,000 to Develop a Second North and South Route Through Downtown Section, and Thereby Relieve Congestion on Broad Street — 1½ Miles of New Track Built

WITH the completion of the track construction work now in progress on Washington Street, Newark, N. J., the Public Service Railway will have a second double-track route passing north and south through the central business district of the city. To accomplish this, the company has spent considerably more than \$300,000 in reconstructing the existing tracks on this street, and extending them to connect at the two ends with important routes leading to outlying sections. Approximately 1½ miles of new track have been built. In addition to this, the city government has spent a large sum to eliminate a troublesome jog at the intersection of Washington and Market Streets. It is planned to divert to this new route part of the railway service now operated on Broad Street, two blocks away, where congestion has become a source of delay to all track movements.

More than ten years ago, when plans were being made for the building of the Public Service Terminal in the heart of Newark, this improvement to Washington Street was included in the project. The primary purpose of building the Terminal Building was to reduce the number of cars crossing the busy intersection of Broad and Market Streets. Access to the terminal was arranged by subway from Washington Street on the

west and by elevated structure from Mulberry Street on the east. The city agreed to undertake the improvement of both of these streets as its share of the plan to improve transportation facilities. An act was passed, at that time by the State Legislature giving electric railways the right to construct connections between existing lines not more than half a mile apart. Connection of tracks on Washington Street with those on Broad Street and Clinton Avenue, came within this category.

Due to the war this comprehensive plan was only partly carried out. The terminal was built with its connections to Washington and Mulberry Streets, and certain improvements were made to the latter thoroughfare. The project of eliminating the jog in Washington Street, however, was delayed and consequently no effort was made by the railway to construct connections at the ends of this street.

Although the terminal project was not carried out entirely as planned, considerable relief was afforded to the Broad and Market Street intersection. As time went on, however, congestion again occurred. This was due in part to the development of extensive bus service and in part to the growing use of the private automobile. A recent traffic count showed more than

Track-Laying and Paving Methods Used in the Washington Street Extension of the Public Service Railway, Newark, N. J.



Track Structure Consists of 7-In. 101-Lb. Tram Rail on Wood Ties with Stone Ballast. This Is the Present Standard Type of Construction of the Railway for Use in Paved Streets



A Curb Separates Railway Area that Is Paved with Granite Block from the Rest of the Street Paved with Asphalt. This Shows the New Track on South Washington Street



Tamping Ballast Under the Ties of the New Track on North Washington Street



Concrete Was Poured on the Ballast Even with the Tops of the Ties



Pouring Hot Mastic Filler between the Granite Paving Block

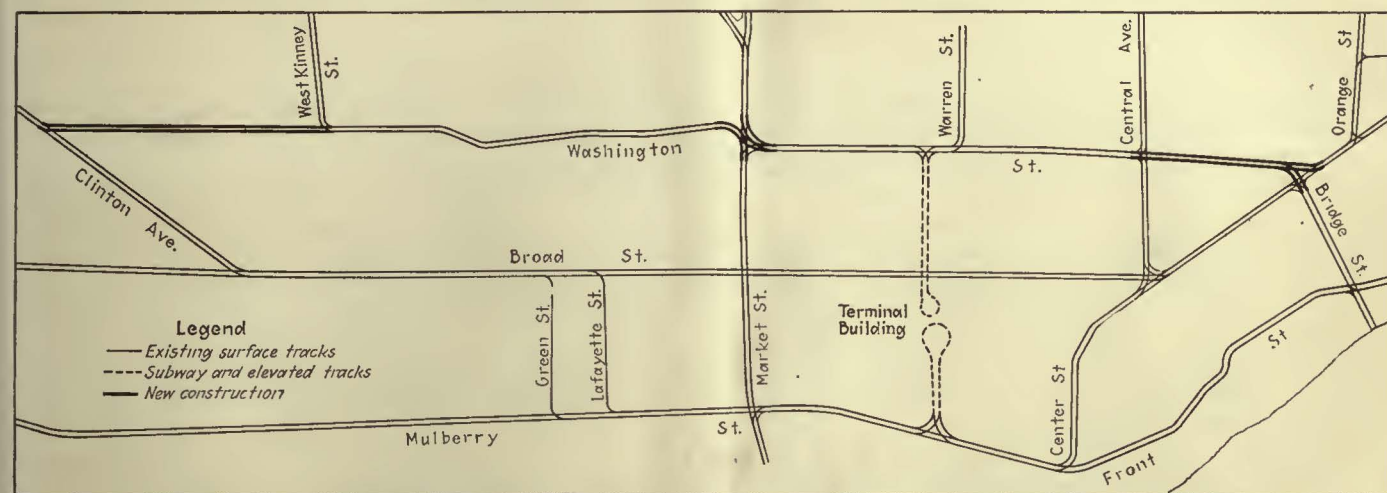
2,700 vehicles crossing this intersection during the maximum hour. Of this number about two-thirds were on Broad Street as shown in the following table:

TRAFFIC COUNT AT BROAD AND MARKET STREETS				
Broad Street				
	North Bound	South Bound	Both	Direction _s
Cars.....	101	75	176	
Buses.....	244	148	392	
Vehicles.....	625	663	1,288	
Total.....				1,856
Market Street				
	East Bound	West Bound	Both	Direction _s
Cars.....	87	94	181	
Buses.....	18	21	39	
Vehicles.....	216	416	632	
Total.....				852
Grand total.....				2,708

While the street cars are not a primary cause of the existing congestion as shown by these figures, their movement is seriously hampered under present condi-

Granite block paving is used in the railway area, although the rest of the street is paved with asphalt. A granite curb was installed by the city about 18 in. from each of the outer rails to separate the two pavements. Re-cut blocks were used on a sand cushion. Between the rails the blocks are laid cross-wise while outside the rails they are laid longitudinally parallel to the granite curb. Mastic filler is used between the blocks with a top dressing of sand.

In accordance with the usual practice of the company, this construction work has been done by an outside contractor. The railway has found it difficult to secure sufficient labor for large track construction jobs on account of the seasonal nature of such work. General contractors on the other hand having work for their men throughout the year do not experience this difficulty. Installation of special track work at the intersection of Market and Washington Streets, and



Track Layout in the Central Business District of Newark, Showing New Track Construction That Will Give Public Service Railway Another Through North and South Route

tions. The narrowness of Mulberry Street and its remoteness from the shopping district prevented its use as a relief artery. Creation of a through north and south route on Washington Street parallel to Broad Street, two blocks away, will make it possible to reroute a number of car lines to avoid congestion.

A little more than a year ago the city definitely undertook the straightening of Washington Street at Market, and the railway, as the first step of its program, undertook the reconstruction of existing tracks on that street. This involved the installation of complicated special trackwork at the above mentioned intersection. In June of the present year, the railway received authority to make the extensions at the two ends, totalling approximately 7,000 ft. of single track. Relationship between these extensions and the existing trackage is shown on an accompanying map.

On this job, the standard track construction adopted by Public Service Railway for paved streets was used. A 6-in. layer of stone ballast was laid on a dirt foundation compacted by a steam roller. Under special work this ballast was pneumatically tamped. Elsewhere it was hand tamped. Wood ties were placed on the ballast and concrete poured, leveled with the tie tops. The rail used was 7-in. 101-lb. tram. Lincoln welded joints were used, the plates being seam-welded and the bolts spot-welded. Less tendency for dirt to collect in the groove, and lighter weight are advantages of tram rail over grooved girder rail in the opinion of the management.

at the ends of the new connections has been done by the maintenance of way forces of the railway as it is thought that outside labor is not sufficiently skilled for this difficult work.

Pennsylvania-Ohio Employees Get Easements on New Right-of-Way

EASEMENTS for the steel towers of the new 40-mile transmission line between Youngstown and Toronto, Ohio, were recently obtained by trainmen and supervisors who were found proficient in the selling of the company's securities. Several campaigns of stock selling, accompanied by the salesmanship training that employees have received, have made possible the accomplishment of this unique stunt.

First an airplane survey was made over the proposed route of the 132,000-volt transmission line connecting the company's new power station on the Ohio River with the distribution substation just south of Youngstown. Since this route was largely through developed farm lands, it was decided to make a mass attack on the owners of this property so that easements could be obtained without giving the opportunity to work up opposition that often proves fruitful of delay and excessive costs.

Several teams were made up from men who had made the best records in the selling of securities. These men included the manager of railways, three superintendents, the machine shop foreman and almost twenty

inspectors and trainmen. Suitable captains were selected and the territory was divided and assigned to each team. Explicit instructions were given and the necessary papers were prepared and distributed. When the zero hour arrived, the teams were all in readiness and in two days 93 per cent of the easements were obtained.

One man on one of the teams did not show up for three or four days but on his return his explanation was quite plausible. It happened that his man was then visiting in West Virginia, so he hopped in his automobile, drove down and came back with the easement papers in his pocket. Nothing remained but for the treasurer to pay the actual money agreed upon.

Traction Bridge Used by Highway Traffic

BY D. H. WALKER

Assistant Engineer T. H., I. & E. Traction Company

WHERE the tracks of the Terre Haute, Indianapolis & Eastern Traction Company are parallel to the National Old Trails Highway, at a point a few miles west of Richmond, Ind., it was necessary that the Indiana State Highway Commission replace an old wooden bridge. A detour by road would have been long and over roads comparatively narrow for the heavy traffic on this highway. At some other bridges replaced at the same time in the immediate vicinity the Highway Bridge Department constructed a temporary detour and wooden trestle crossing the stream a few feet distant from the wrecked structure. Such a procedure would have been rather costly in this case owing to the nature of the stream bed and rather dense timber growth in the bottoms. The commission then obtained permission from the management of the traction company to divert highway traffic over the interurban bridge under certain conditions.

Accordingly the floor of the electric road bridge was covered with 3-in. planking spiked to the bridge ties. Guard rails were removed in order to provide a smooth surface. A guard fence, painted white, was erected on both sides for the length of highway travel on the interurban right-of-way. The turnoffs from the highway were made about 150 ft. distant from the bridge at each end in order to give the contractor room for tools and equipment while constructing the new bridge. As the rails were only a few inches above the pavement and no ditch existed between the track and highway it was easy and inexpensive to make a smooth passage-way from the highway to our bridge.



Railway and Highway Signals Interlocked Near Richmond, Ind., While Vehicular Traffic Temporarily Used the Bridge of the T. H., I. & E. Lines

As this highway carries a heavy and constant stream of traffic it was necessary to prevent any vehicle from driving on the bridge when cars were approaching. It was also desired to slow up the interurban cars as little as possible. Naturally only one-way vehicular traffic could be accommodated, and means were thus necessary for stopping traffic after an interval in any one direction and then reversing the direction of the traffic.

Our electrical department worked out an interlocking control for block signals to handle the traffic. As can be seen in the accompanying illustrations each direction of highway traffic was faced by a control block showing "Stop" or "Go." These signals were of the type used for traffic control in the city streets. Our cars were controlled by blocks with standard red and green signal projectors, one being placed about 200 ft. ahead of the bridge at each end. The interlocking of signals provided three combinations. When the track blocks were green both directions of highway traffic were red. When eastbound highway showed green, "Go," blocks were red for westbound highway and in both directions on the track. Likewise, when westbound highway traffic was moving there were red blocks for east-bound highway and in both track directions.

A watchman's shanty was built at one end of the bridge and the control block for the signal placed there. From this shed he could see cars approaching from both directions and could likewise see the highway each way. The watchman was maintained 24 hours a day. The cars approached the bridge under full control and watchman stopped highway traffic before their arrival.



Railway and Old Highway Bridges as They Appeared Before Work Began



Watchman's Shanty with Long View in Both Directions, from Which Signals Were Controlled

Depreciating a Property Sold Below Cost

Replacement of Elements When Worn Out Is an Important Consideration in the Charges to Depreciation Where Capital Invested Is Less Than the Physical Value—Rate Should Make Possible Continued Operation Over a Period of Years

NCESSITY for an adequate depreciation reserve has raised an interesting question in the case of the Jamaica Central Railways, Inc., Jamaica, N. Y. This property was recently reorganized from the defunct Long Island Electric Railway. It was purchased at a price far below the intrinsic value of the road. In connection with the operating accounts it was necessary to establish a rate for depreciation which would permit continued operation of the property over a period of years.

To this end a study was made for the road by Fisk & Roberts, consulting engineers of New York. This study included an analysis of the various elements owned by the company and subject to depreciation, the rules now in use by transit companies in New York City, and a forecast of the company's investment, which can be expected virtually to disappear within the next three years.

As a result of the study, it was recommended that an amount equivalent to 2.62 cents per car-mile be set aside as a depreciation reserve. The principal points raised are discussed in the following abstract:

DEPRECIATION RESERVE NECESSARY

The necessity of a depreciation reserve for street railways is recognized in the prescribed uniform system of accounts of the Transit Commission of New York, which provides that some definite rule shall be adopted by each company by which the total maintenance, including capital consumed in operation, accruing in a given year shall be charged during that year to operating expenses. However, the basis of the depreciation charge and the method of accumulating the fund are not specified by the Transit Commission, and within certain limits are optional with each company.

The uniform system of accounts as prescribed by the New York Transit Commission, which has jurisdiction over that part of the road in New York City, states, regarding road and equipment and other capital purchased, that when any road or other fixed capital in the form of a going or completed plant is purchased, an appraisal of such capital so acquired shall be made. The different constituent elements of the road (and equipment, if any) or other capital acquired shall be appraised at their structural values; i.e., at the estimated cost of replacement or reproduction less deterioration to the existing condition through wear and tear, obsolescence, and inadequacy. If the actual money value of the consideration given was at the time of the acquisition in excess of the appraised value, the excess shall be charged to the account. Other intangible street railway capital, and the appraised values of the constituent elements shall be charged to the appropriate accounts as designated in the following definitions of accounts for expenditures for road and equipment and other fixed capital. If the actual money value of the consideration given was not in excess of such appraised value, the actual money value shall be distributed

through the accounts in proportion to the appraised value of the constituent elements.

Inasmuch as part of the property of the railway is outside New York City it falls within the jurisdiction of the Public Service Commission. Hence consideration had to be given to that commission's uniform system of accounts, which states in part:

Depreciation accounts are provided in order that carriers may, through the creation of adequate reserves, equalize from year to year, as nearly as is practicable, the losses incident to important retirements of buildings, bridges, trestles, etc., or of large sections of continuous structures like track or electric line, or of definite units of equipment. "Losses" as used above means in each case the difference between the original cost to the accounting corporation of the property retired and its salvage value at the time of its retirement.

The cost of replacing minor parts, which is not recorded by any entries in the road and equipment accounts, and which is commonly called the cost of "repairs" or "maintenance" as distinguished from the cost of "replacements" of large units, need not be provided for through depreciation charges. The amounts charged to depreciation accounts should be upon a basis determined to be equitable according to the carrier's experience and best sources of information and should in all cases be sufficient to provide during a period of years a reserve against which can be written off all losses sustained upon the retirement of property either when its natural life has expired or when it has become obsolete or otherwise inadequate for efficient service.

While each corporation may determine for itself the amount to be reserved annually for depreciation as herein defined, the commission will necessarily, in deciding rate and other cases, have to pass upon the adequacy or inadequacy of such charges. As an indication of its policy in this respect, therefore, the suggestion is made, based upon the commission's experience in the regulation of electric railway utilities, that a depreciation charge amounting to not less than 2 per cent or more than 5 per cent per annum on the average total cost of all ways and structures or to not less than 2 per cent or more than 10 per cent per annum on the average total cost of all equipment, will, under normal operating conditions, be generally less open to question than rates which fall above or below these limits. It is also suggested that depreciation rates should preferably be stated in terms of a percentage of the cost of depreciable property, because it is believed that form of statement is, on the whole, the clearest and simplest way of expressing the normal depreciation charge and furnishes the readiest basis for comparison between companies. It is not necessary, however, that separate reserves shall be set up for each unit of depreciable property, nor even for each class of property, but it is the intention that a general depreciation reserve shall be maintained, adequate at all times to cover the losses which are realized when large units of equipment or important sections of continuous structures are retired from service as a result of wear and tear, obsolescence, or inadequacy.

VALUE OF THE PROPERTY

The investment of the present owners of the Jamaica Central Railways, Inc., in property subject to depreciation consists of the sum paid for the property, which was offered at public auction by the referee in the Long Island Electric Railway receivership, less that portion of the amount which represents non-depreciable real estate, and in addition all subsequent capital expenditures.

In determining the value of the various items making up the property purchased at the foreclosure sale, the instructions from the system of uniform accounts of the New York Transit Commission were followed, particularly that portion which says that if the actual money consideration given was not in excess of the appraised value, it should be distributed in proportion to the said appraised value of the constituent elements.

At the foreclosure sale of the former Long Island Electric Railway the successful bid made on behalf of the present owners was \$115,000, which was much less than any appraised value of the property. The estimated reproduction cost, less depreciation, as of the date of the foreclosure sale was \$447,425. Of this

of this station would not exceed three years, and should be depreciated at the rate of 30 per cent.

Of the rolling stock 25 passenger cars were appraised at \$75,000, and written off to \$19,100 to correspond with the purchase price of \$115,000. With a life determined by the engineers at approximately five years, they were depreciated at 20 per cent.

The eleven other cars purchased are mainly service equipment. While in worse condition than the passenger cars, they are used less, and were also depreciated at 20 per cent.

MATERIALS AND SUPPLIES

Materials and supplies taken over by the company at the referee's sale were appraised at \$4,679. Adjusting this account in proportion to the purchase price they are valued at \$1,200. As a result of the normal obsolescence and loss incident to handling such supplies, it was estimated that the account should be depreciated at 5 per cent per annum.

The buildings consist of a substation, carhouse, shop and passenger terminal. These buildings were appraised by the company's experts at \$65,000, and, adjusted in accordance with the commission's rule, will be capitalized at \$16,730. They are useful only for railway purposes, and it has been estimated that they have a future life of not more than ten years. Upon this basis the annual depreciation charge covering the buildings amounts to 10 per cent.

DEPRECIATION OF AFTER ACQUIRED PROPERTY

Six open cars purchased by the company since taking over the property were appraised at \$12,000. The purchase price plus expenditures made in rehabilitation amounts to \$8,463.24. Since the commission has suggested that all open car operation must be abandoned within the next two years, these cars have been depreciated at the rate of 50 per cent.

Ten Birney cars purchased have been appraised at their actual cost of \$39,500. Since these cars were recently overhauled and repainted, they were depreciated at a rate of 15 per cent.

Spare motors were purchased in the amount of \$1,000. Since they will meet with rather severe operating conditions, this equipment was depreciated at the rate of 20 per cent. The shop machinery taken over amounted to practically nothing, but subsequent to the sale the company has acquired new and second-hand machinery in the amount of \$709. This equipment was depreciated at the rate of 15 per cent. Additional materials and supplies purchased amounting to \$5,174.22, were depreciated to cover losses incident to handling and breakage amounting to 5 per cent. Office furniture and fixtures in the amount of \$2,004 were estimated to depreciate at the rate of 10 per cent.

In acquiring the original property taken over the company incurred charges to capital account amounting to \$20,000 to cover financing, legal and other organization expense prior to the acquisition of the property. This capital charge should be amortized over a period of not more than ten years, rather than be carried indefinitely as a capital expenditure.

DEPRECIATION CHARGES SUMMARIZED

Tables II and III show the prorated cost of the original property purchased from the referee and the actual cost of all property acquired subsequently. Opposite each item is the estimated amount which should

TABLE I.—APPRAISED AND ADJUSTED VALUES, PROPERTY PURCHASED BY JAMAICA CENTRAL RAILWAYS

Account	Present Values	Costs Adjusted to Purchase Price
Way and structures.....	\$199,509	\$51,400
Substation equipment.....	10,937	2,820
Second Avenue cars.....	75,000	19,100
All other cars.....	7,300	1,880
Material and supplies.....	4,679	1,200
Buildings.....	65,000	16,730
Grounds.....	85,000	21,870
Total.....	\$447,425	\$115,000

amount \$362,425 represented depreciable property used and useful for railway purposes.

Following the rule laid down by the commission, the distribution of the purchase price among these various accounts was determined. The corresponding figures, along with the appraised values, are given in Table I.

Various expenditures for capital account have been made since the foreclosure sale. These were found to total \$79,531. Thus the cost of property purchased at the foreclosure sale and the after acquired property total \$194,536. This does not represent the appraised value of the property owned by the railway, which, with the after acquired property included at actual cost would be \$526,956.

The rule as laid down by the commission was followed and depreciation charges were based on the cost to acquire the property, rather than its appraised value.

ESTIMATED ANNUAL DEPRECIATION

The amount of money which should be set aside annually to cover the depreciation of the company's property acquired at the referee's sale necessarily was based on three factors as follows:

The appraised present value of the property acquired at the referee's sale, fixed at \$447,425 less \$85,000 to cover land and grounds on which there is or should be no depreciation.

The adjusted values of the various items acquired at the referee's sale to correspond with the total purchase price of \$115,000.

The addition of the various items of property purchased subsequent to the referee's sale.

DEPRECIATION RATES

After an examination of the property making up the way and structures account, it was estimated that the average remaining life of all property making up this account is $3\frac{1}{2}$ years, and after allowing for possible salvage value the annual rate was fixed at 25 per cent.

The substation equipment is old, obsolete and badly worn. Its replacement is under consideration at the present time. It was estimated that the maximum life

be set aside annually to provide an adequate depreciation reserve. The total of all property acquired on the basis of this actual cost is \$194,531. The estimated annual depreciation reserve has been fixed at \$33,071.50, or at the rate of 17 per cent on the adjusted purchase price of the entire property. However, on the basis of the appraised value of the property, the annual depreciation amounts to 6.28 per cent.

TABLE II—ADJUSTED COSTS AND ANNUAL DEPRECIATION OF PROPERTY PURCHASED AT REFEREE'S SALE

Account	Cost Adjusted to Purchase Price	Annual Rate	Depreciation Amount
Way and structures.....	\$51,400	25	\$12,850
Substation equipment.....	2,820	30	846
25 Second Avenue cars.....	19,100	20	3,820
Eleven other cars.....	1,880	20	376
Materials and supplies.....	1,200	5	60
Buildings.....	16,730	10	1,673
Grounds.....	21,870	..	.....
Total.....	\$115,000		\$19,625

TABLE III—ACTUAL COST AND ANNUAL DEPRECIATION CAPITAL EXPENDITURES SUBSEQUENT TO REFEREE'S SALE

Account	Actual Cost	Annual Depreciation
Way and structures.....	\$1,350	\$67
Six open passenger cars.....	8,463	4,230
Ten safety cars.....	39,500	5,925
One old trailer passenger car.....	25	25
Passenger car motors.....	1,000	200
Shop machinery.....	709	106
Materials and supplies.....	5,174	258
Furniture and fixtures.....	2,004	200
Organization expense.....	20,000	2,000
Miscellaneous.....	1,306	435
Total.....	\$79,531	\$13,446

Although the Transit Commission has looked with favor upon a combined maintenance and depreciation reserve, the results obtained by the New York companies seem to indicate that a better scheme, at least for the Jamaica Central Railways, would be to set aside a definite amount to cover depreciation reserve. With such a method in operation regardless of the maintenance charges, the company would be sure that adequate reserves were being set aside to replace property destroyed or worn out.

Since on any railroad the annual car miles operated should bear a close relation to the value of the property the engineers stated that in their opinion the safest way to accumulate such a reserve is to set aside monthly an amount based on the car miles operated. After a study which indicated that approximately 1,261,000 car miles will be run the first year, it was recommended that 2.62 cents per car mile be reserved from earnings, making a fund of some \$31,000 at the end of the year.

Safety Code for Amusement Parks in Preparation

INITIATION of work on a national safety code for amusement parks, which will include specifications for the construction, operation and inspection of amusement devices, is announced by the American Engineering Standards Committee.

The code, the preparation of which was requested by the National Association of Amusement Parks, is being developed to provide protection for both employees and patrons. While the primary purpose of the work is to provide authoritative rules for voluntary adoption by the industry itself, it is being so carried out that the code may be used in the regulation of amusement parks by public bodies. Accordingly the

national organizations of state and city officials having to do with such matters are officially participating in the preparation of the code.

The code will contain three main parts. The first section will deal with general conditions applicable to all devices and with the special conditions applying to particular devices, namely: to gravity, central pivot, cable driven and loose-car rides (structure, care, brakes, loading); to fun houses; and to walk-through devices. The second and third sections will deal with operations, and with inspection and maintenance, respectively.

The national organizations which are officially co-operating in the formulation of the code through representation on the sectional committee are: Building Officials Conference, National Association of Amusement Parks, National Bureau of Casualty and Surety Underwriters, International Association of Industrial Accident Boards and Commissions, National Safety Council, American Society of Mechanical Engineers, U. S. Department of Labor, International Association of Fairs and Expositions, and the Association of Governmental Labor Officials of the U. S. and Canada.

Highly Meritorious Booklets Issued at Chicago and Montreal

THE Chicago Surface Lines, Chicago, Ill., and the Montreal Tramways Company, Montreal, Canada, have both issued profusely illustrated booklets for educational and advertising purposes. The Chicago Surface Lines Year Book 1925-1926, is a 46-page booklet with a colored frontispiece, "In the Heart of the Shopping District." On Feb. 1 the company entered upon the last year of the franchise period. In many cities, under those circumstances the property has been allowed to deteriorate, but in the case of the Chicago Surface Lines it was never in better condition. More passengers were carried and more miles operated during 1925 than ever before. The growth and the service of the company are outlined with particular attention to the last three years, at which time the properties were just beginning to recover from the effects of the readjustment from war conditions. Their present efficiency is due largely to what has been accomplished since that time. Schedules have been revised to fit changed conditions, and more than 12,000,000 annual car-miles have been added to the service. In that same time 345 new cars have been built or purchased, 95 miles of track have been reconstructed and 15 miles added and a new system has been introduced by which all cars are being overhauled and repainted at the rate of once in two years. Passenger statistics for the year show an increase over 1924 of 24,783,119 rides. The company owns buildings, including among many others 16 operating carhouses, 57 storehouses and sheds, and two clubhouses, to the approximate value of \$20,000,000. Economies have been effected in practically every department with marked increase in efficiency. Six photographs about the shops are reproduced and a great many photographs of different types of cars that have been used during the company's years of service. The booklet ends with a résumé of the constituent companies and their predecessors, an outline of the organization of the company and a list of the officers.

"Public Relations," put out by the Montreal Tram-

ways Company, is frankly an advertising booklet. The company believes in advertising, as it says in the introduction, for three reasons: First, to gain and hold the support of the public; second, to educate the public up to intelligent co-operation with the management of the company; third, to stimulate business. The company served a population of 1,028,000. The total passengers carried during 1925 were 288,212,649. Snow is a factor to be reckoned with in Canada. The average yearly snowfall for the last 40 years was 119 in., and the average cost of snow and ice removal for the last two years was \$425,000. Reproductions of 41 advertisements which have appeared in Montreal newspapers are included. An interesting one shows the way the price of each ticket is spent by the company; the average fare is 6.06 cents; of that 2.73 cents goes for salaries, 1.22 cents for operating expenses, 0.92 cents for interest on money loaned to the company, 0.67 cents to the city of Montreal for taxes, 0.25 cents for taxes other than the city of Montreal, 0.08 cents for the maintenance and renewal fund, 0.19 cents for dividends to stockholders. A map in the center of the book shows the various car routes in greater Montreal.

What One Car Said to Another

One of the Talks Given at Meeting of Women of the Philadelphia Company for Developing Contact with Outside Interests

BY MRS. MARY C. BEST

Pittsburgh Railways, Pittsburgh, Pa.

EDITOR'S NOTE—Growing out of the Contact Club organized some years ago by officers and junior officers of the Philadelphia Company, the holding company operating the Pittsburgh Railways and other utilities in that city, a "sister club" was formed called the "Tact Club." The membership of this organization was limited to secretaries or other women in more responsible positions.

This talk was one of the best given at a recent meeting and is indicative of the work that women can do to promote the welfare of the railway companies providing they are allowed to expand their activities into outside fields.

SOME months ago when I became a member of this club, I was accused of having tried to obtain a position as operator of a one-man trolley car. I denied the charge, but afterwards I said to myself: "Well, I may never have any other kind of car to drive, so why not investigate this proposition of driving a one-man trolley car. It may have possibilities." And myself said to me, "It isn't a bad idea at all. Better look into it."

Since then I have been gradually acquiring some information concerning trolley cars and one night recently I had an exceptionally favorable opportunity. While walking out Craft Avenue past the carhouse, I heard unusual sounds coming from beyond the brick wall surrounding the yard. I listened, and presently discovered that two of the cars were having a little confidential talk over there. So I thought, "Here's a chance to learn something about these cars."

It seemed that a new one-man car was talking in a rather condescending manner to an old worn-out single trucker—one of the last of its race, which happened to be standing on an adjoining track. The dilapidated old car still had some spirit, however. "You need not be so superior," he said. "I know I am just a worn-out dinky, fit only to operate on the Toonerville line, but I

have traveled many a mile in my time and carried many passengers."

"You a traveler," said the new car. "Why, you only came here from McKees Rocks, where you were built. And your longest trip was probably to Kennywood Park. I have already traveled all the way from Boston, Mass., where I was built.

"The men who made me, put into my construction materials from all over the world. They used a design originated by the Pittsburgh Railways, the low-floor, center-entrance type of double truck-car, with four so-called 'baby' motors. Can you imagine 160 horses prancing along the streets with each car? Pittsburgh would look like Red Gulch, Ariz., on a rodeo day. These motors of mine were built by the Westinghouse company here in Pittsburgh, but the iron, steel and copper came from the Great Lakes region in Minnesota. Eight different kinds of wood from the forests of North America form parts of me, and there are also rattan from Java, cotton from the Southern States and rubber from South America.

"As an up-to-date car, I am equipped with the most modern safety devices, so that my operator has less to worry about than when operating other types. These devices include eight wheel brakes, operated by air, but which may be operated by hand in case of necessity, a safety stop light at the rear to warn auto drivers when I am about to stop and the newest type of life guard or fender. I have four sand boxes, so sand will flow from all boxes onto the rail when making an emergency stop. The mechanism which opens and closes my doors is interlocked with my air brake apparatus, so that it is impossible for my doors to be opened without first applying the air brakes, and the operator cannot put on the power to start me without closing the doors. My controller is also equipped with safety devices, so that if the operator removes his hand from my controller without applying his foot to the foot valve, my circuit breaker is knocked out, emergency air and sand applied, and I am brought to a stop in a hurry."

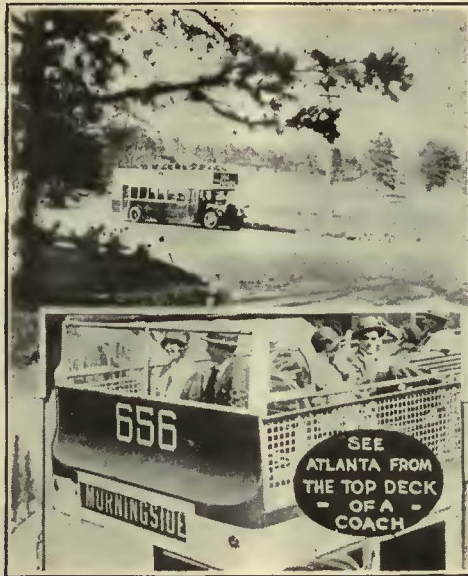
"How interesting," murmured the old car politely. "But tell me, do you like Pittsburgh now that you are here?" "Oh, yes," said the new car. "Life here has its ups and downs, to be sure. To say nothing of its ins and outs, which must be learned by the operator. Also, innings and outings, now that the baseball and picnic season has arrived."

"And do you not find the Pittsburgh climate injurious to your complexion?" asked the old-timer. "You can see how dull and grimy I have become."

"Not at all," answered the one-man car. "You see, the only paint I have ever used is 'Duco,' the new finish which is almost impervious to the effect of climate and has a lovely glossy surface, and a shining exterior being fashionable for cars, though not for noses, I never have to carry a powder puff. Also, since the shops have inaugurated their present repainting schedule, I shall get a new coat of Duco every two years and scrubbed by Mr. Leschke's new shower bath machine ever so often."

The conversation ceased abruptly, for one of those aforesaid valets came along just then. But I hope you will agree with me that operating a one-man car would not be such a bad job and some day, if I can fix it up with the personnel department, you may see me in the operator's cab. Then I shall expect you all to come and take a ride with me.

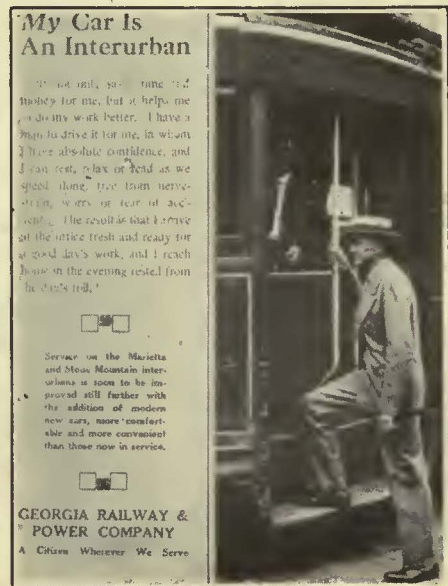
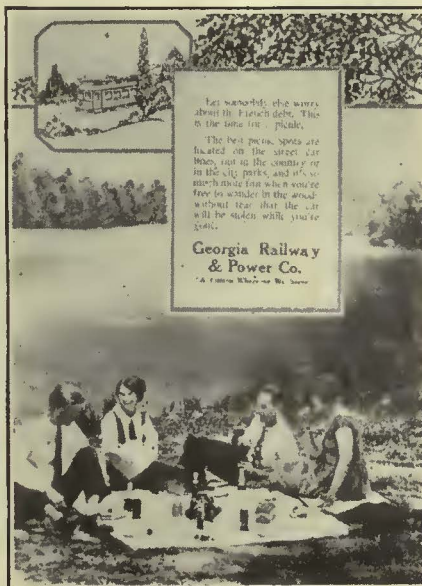
Atlanta Uses Rotogravure Supplements to Advertise Service



ROTOGRAVURE supplements prepared for Sunday newspapers, and sometimes for issues of daily papers on other days than Sunday, have become a well established feature of journalism. The interest which the views in these supplements has for readers gives them an excellent advertising value which many merchants recognize, but the number of railways which have used such media extensively for advertising is limited.

An exception is the Georgia Railway & Power Company, which has included the rotogravure sections of the Atlanta newspapers in a campaign the company has been conducting for the past few months to build up the street car and coach riding habit. The illustrations on this page are reproductions of some of the advertisements placed by the company. As will be noted, they are directed largely to automobile owners, because the company believes that a good source of additional patronage for its cars and buses may be encouraged from this class.

The campaign has been conducted under the direction of L. K. Starr, manager public relations department of the company. Mr. Starr says that while it is impossible to tell exactly what effect these particular advertisements have had, there has been an encouraging increase in the patronage of the two services, following the beginning of the campaign.



Novel Radio Stunt Provides Valuable Advertising

USE of the radio as an advertising medium has been developed in an unusual way by the Northern Texas Traction Company, Fort Worth, Tex. The programs are broadcasted semi-monthly from station WBAP of the Fort Worth *Star-Telegram* and *Record-Telegram*.

In June, 1925, the company first started using the radio, but soon decided that a change from the conventional type of program was needed in order to hold the attention of the unseen audience. Consequently, in January, 1926, an act was inaugurated which was so refreshing in its novelty that a total of 2,612 "fan letters," a record for station WBAP, were received after the first program.

This popular stunt consists in a round trip between Fort Worth and Dallas on the "Crimson Limited," the non-stop interurban train of the company. A specially constructed noise-making device in the studio faithfully reproduces all the sounds made by interurban trains in actual operation over the line, such as the conductor's signal bell, warning gong, motor pick-up, click of wheels, and whistle. With this realistic obbligato the announcer describes the passengers, scenery, incidents of the road, etc., with so much enthusiasm that many of the listeners are reported to believe that the program is being broadcasted while the train is actually going over the line. New incidents of the trip are introduced from time to time to give variety to the program.

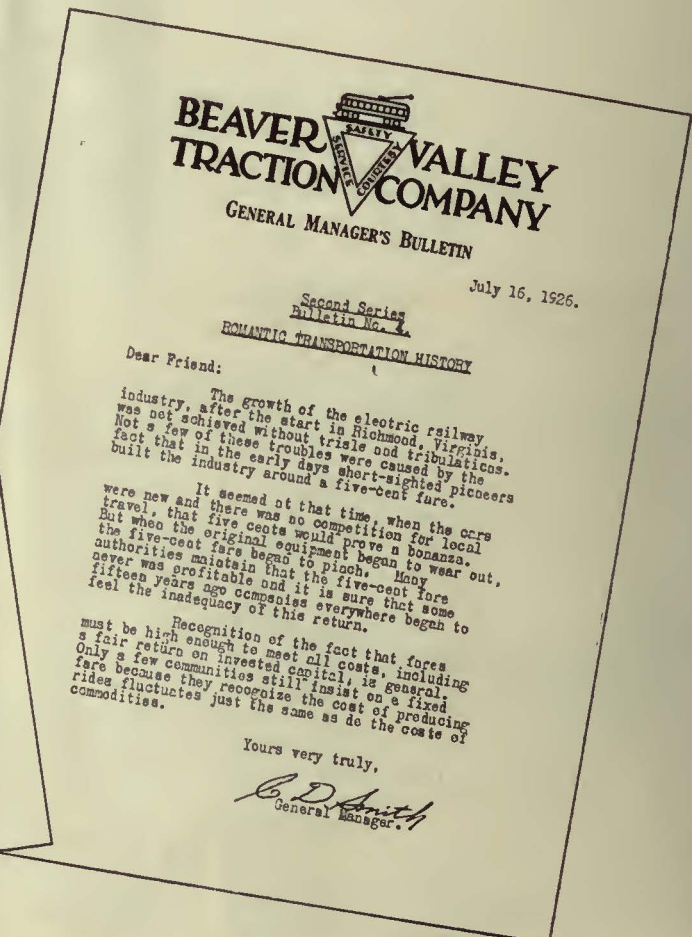
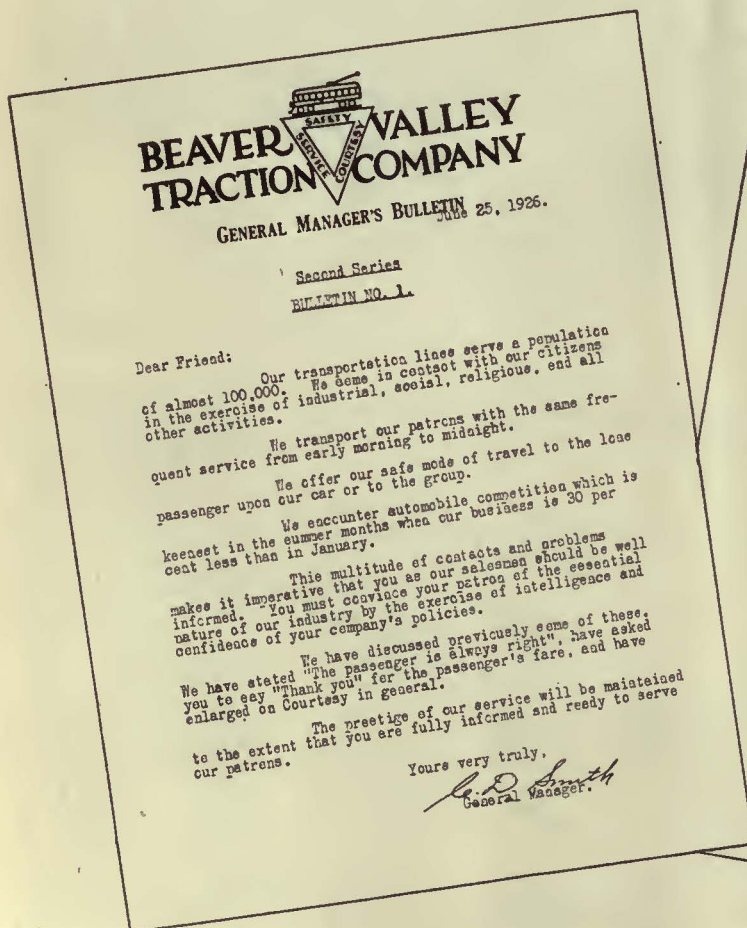
Recently the company erected its own studio, where, in addition to the trip on the "Crimson Limited," entertainment is furnished by three orchestras and various

vocal artists, many of whom are recruited from the company's own employees.

The advertising advantage of these programs is tremendous and varied. In the first place, the emphasis put on efficient and courteous service creates a higher *esprit de corps* among the employees and their families. Moreover, as far as the general public is concerned, the radio not only provides direct contact with the majority of potential patrons, but it also offers an opportunity for follow-up advertising in connection with the mass of "fan mail" which is continually coming in. Every communication is immediately answered by a letter, over the signature of the general passenger agent, containing a souvenir time-table. Thus, by this means the "Crimson Limited" has become known to countless people who could not have been reached by any other method.

Building Good Will with Manager's Weekly Bulletins

WEEKLY bulletins telling of the romantic history of the transportation industry are being issued to employees and friends by the Beaver Valley Traction Company, New Brighton, Pa. Various modern aspects of the business are also explained, in order to give the employees and patrons an insight into the real problems which the company has to face. From the employees' standpoint, the success of the experiment is an interesting justification of the theory that a man can do his job better when he understands why he is doing it. As good will builders among patrons of the company they also play an important role.



Typical General Manager's Bulletins Issued by Clinton D. Smith to Employees and Citizens

Maintenance Notes

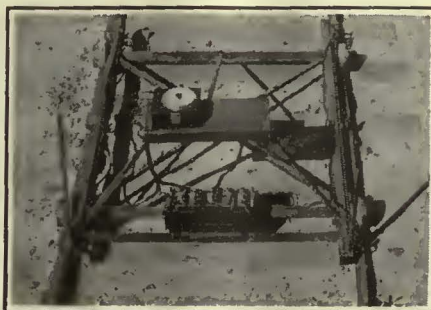
Light Weight Car Used for Bond Testing

By A. O. MANGOLD

Electrical Supervisor Southern Pacific System, Beaverton, Ore.

OWING to infrequent interurban train service on the electrified lines of the Southern Pacific Company at Portland, Ore., the testing of bonds by use of the return propulsion current was found to be very inefficient and costly. In order to obtain more reliable results with a saving in labor, we constructed, at the Beaverton shops, a portable testing car, which, after a year's service, has proved very successful. The cost of testing rail bonds has been reduced 65 per cent, and we have been able more accurately to determine the condition of the bonds than was possible before.

The bond testing car is very light and is easily propelled and operated. Its total weight is but 124 lb. and the car less battery weighs but 80 lb. It consists of a wood frame supporting a series of contacts for each rail, which are raised and lowered from the operating position by two small levers. Five saw-blade contacts are provided on each side, the two outer ones being connected through a switch on the instrument



Top View of the Bond Testing Car with Instrument and Battery in Place

table to an Edison storage battery, which provides a flow of current when necessary across the joint to be tested. The remaining three contacts on each side are connected to a Roller-Smith direct reading bond tester in the usual way. In testing a bond the car is rolled over the joint so that the word BOND, which is stenciled on the operating rod, is over the center of the plate, and the contacts are lowered on that side by the operating lever. If sufficient propulsion current is flowing in the rail to give a good indication on the instrument a reading is taken and recorded on the report sheet carried on the shelf beside the instrument. The contacts are then raised by the lever and the car is moved to the next joint. However, should there

be no propulsion current flowing, or an insufficient amount to actuate the instrument galvanometer, the push switch is depressed and the battery provides the necessary current. It has been found that the saw blade contacts offer just the right resistance in the power circuit to limit the current to 15 amp., which gives a good reading on the bond tester. The battery holds up very well for 10 to 12 miles of testing.

It was necessary to produce a car that would not be classified as a loaded push car and be subject to the transportation rules, which would limit its usefulness. The car had to be light in weight, yet strong enough to carry the equipment and stand service on the rails. It had to be simple, quick to set up and knock down and easy to operate. It also had to be very compact when disassembled so that it could be handled on passenger equipment or on light motor cars, and so it could be easily removed from the track by one man.

The car and its equipment were made light enough to be easily lifted from the track by one man, which takes it out of the "loaded push car" class. Lightness and strength were obtained by making the entire frame of spruce reinforced by wrought iron where necessary. The wood frame also provides insulation between the rails, so the car can be used in signal zones without operating the signals. An Edison battery was used on account of its ruggedness and light weight.

Simplicity in assembling and disassembling the outfit was obtained by having most of the folding parts hinged together and the wiring cable provided with plug and socket connectors, plainly marked so that errors in connections would be avoided. Compactness was obtained by arranging the folded parts so that very little space is necessary for storage. The two main parts (sides folded) can be stood up in the corner of a passenger car or laid along the tie rods of a motor car. Concentration of the weight of instrument and battery at the rear end of the car enables the operator to lift the entire outfit from the rails should necessity arise.



The Test Car Is Rolled Over the Joint to Be Tested and the Operator Takes a Reading on the Instruments



The Test Car Folds Up so as to Take Little Space in Storage

The electrified lines on the Portland division included a signal zone 20 miles in length that formerly required two men from twelve to fourteen days to test, and then with very unreliable results, as the tester was found to work best only when trains were in the immediate vicinity of the testing crew. The time of the men in between trains was practically lost. Signal failures due to defective bounding were frequent.

With the new testing car and outfit this same section of track is now covered in four to five days with accurate readings obtained at each joint. No signal failures have resulted from defective bonds since the car was placed in service.

A glass cover constructed for the instrument makes the car usable in all kinds of weather. The apparatus was designed and constructed by the Southern Pacific Company at its Beaverton shops under the direction of R. D. Young, shop foreman, and the writer.

Special Steel Used for Wear Blocks of Swing Links

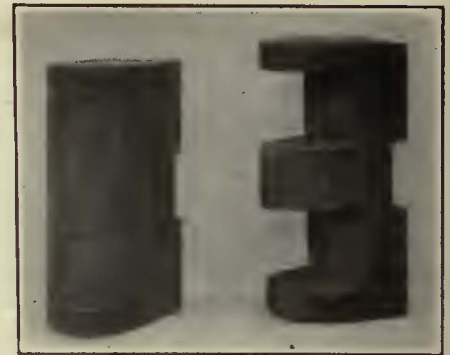
BOLSTER swing link bearing blocks are subjected to rather hard service. On the trucks of cars operated by the New York, Westchester & Boston Railway hardened

steel wearing blocks were used originally and a service of from eight to ten months was obtained before these were worn to such an extent as to require replacement. The company is now using Nuttall B.P. process steel for these swing link bearings and a much longer service is obtained.

The accompanying illustration shows two wearing blocks which have been in service the same length of time. The one on the left is of B.P. process steel, while that on the right is of special hardened steel, of the type previously used. The one on the right has worn to such an extent that it is necessary to replace it, while very slight wear has occurred on the wearing block shown at the left.

Preventing Splitting of Wooden Dust Guards

IN MAKING dust guards of wood, the Department of Street Railways, Detroit, Mich., found a tendency for the wood to check and split along the grain. This tendency has been overcome by placing a piece of tin across the end, so that it extends lengthwise across the grain of the wood. This has effectively prevented the trouble. An accompanying illustration shows a storage rack with dust guards of this construction.



These Two Bolster Swing Link Wearing Blocks Have Had the Same Service

The one on the right, made of hardened steel, has worn so that replacement is necessary. The one on the left, made of B.P. process steel, shows very little wear.

Steel Cabinet for Storing Open Paint

UNUSED odds and ends of paints and oils left around a paint shop not only look untidy but are an extreme fire hazard. The illustration shows a four-door steel cabinet designed and built in the Chattanooga Railways shop for keeping open paints and oils. The walls and doors are constructed of steel plates stiffened by small structural shapes that have been welded to the plates. At night all opened cans of paint and oils generally found around a car paint shop are stored away and the doors locked. The shelves in the cabinet to the right are recessed



Wooden Dust Guards Are Constructed with Tin Reinforcing Strips at the End to Prevent Splitting When Installed in Motors in the Department of Street Railways, Detroit, Mich.



Steel Cabinet Built by the Chattanooga Railway Shop for the Storage of Paints and Oils in Use in the Painting of Cars

slightly to allow the steel table to be folded up and the door closed over it. Only clean rags are kept in the cabinet in the bin on the left. All oily rags are burned at the close of the day. Self-closing waste cans are provided for other trash. This arrangement is not only a precaution

against fire but also makes it possible to keep the paint shop in the same immaculate condition as the rest of the shop.

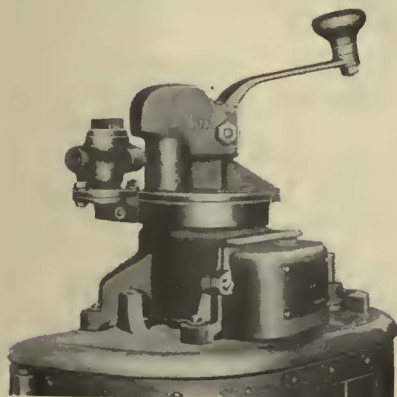
The Chattanooga Railway is part of the Tennessee Electric Power Company recently placed under Hodenpyl-Hardy management.

New Equipment Available

Handle Switch Prevents Burned Fingers

TO REPLACE the ratchet switch used for controlling the line switch on "K" controllers, the Westinghouse Electric & Manufacturing Company has developed the type "TA" handle switch. It makes use of a 24-deg. lost motion between the handle and the controller drum, to insure the operation of the line switch before the main controller drum is moved.

As the controller is notched up,



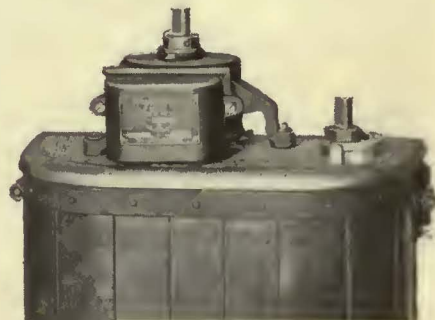
Handle Switch Applied with Standard Safety Device

the handle first passes through the angle of lost motion, closing the contact in the line-switch control circuit. The control circuit is completed on the first notch through the spot ground contact and is completed on all other positions through the line switch interlock. As the controller is notched off the handle passes through the lost motion, breaking the control circuit and dropping out the line switch before the drum moves. This reduces the controller maintenance expense, as there is little or no burning of the controller fingers, contacts and arc barriers. The operation of the handle switch is the same as the ratchet switch in so far as the overload trip is concerned.

Standard safety device handles used in conjunction with dead-man control can be used with the TA switch without any modification of the dead-man attachment or the switch. The switch is mounted well within the dimensions of the cap plate. This is accomplished without modification of the cap plate, handle switch or controller handle, except for the drilling and tapping of the mounting holes. In most

cases no machining is necessary either inside or outside of the controller. The only requirement necessitating work inside the controller is adding the spot ground contact and finger, in case these are not already mounted in the controller. The location of the device on top of the cap plate makes it accessible for inspection, all working parts being reached by removing the cover plate.

The original "K" controller handle can be used with the handle switch, making it unnecessary for the operating company to duplicate this part. To add to the convenience of operation, however, a new low-type knob grip has been developed. This flat top grip seems to be more restful and has met with general approval among the operators who have used it. The total height of the handle above the cap plate, with the new low knob,



Westinghouse TA Handle Switch Applied on Standard "K" Controller

is 10 $\frac{3}{8}$ in. for the standard high type "K" controller handle, and 9 $\frac{3}{8}$ in. for the standard low type handle. In further refinement, the manufacturer has produced a handle the total height of which is 7 $\frac{1}{4}$ in. above the cap plate.

Tractor Welders Now Available

ELECTRIC arc welding equipment assembled in a complete unit with gas-engine drive is being brought out by the General Electric Company, Schenectady, N. Y. The equipment can be mounted on Fordson tractors for portable use at points remote from power lines. The General Electric Company does not market the complete outfit.

In such a combination, the same gas engine drives both the tractor and the generator which supplies the current for the welding electrodes. The tractor is equipped with rubber tires and can be driven to the job at a speed of from 15 to 18 m.p.h. The belt is then connected to the generator and the outfit is ready for welding operations.

American Association News

Program for Cleveland Convention Announced

PREPARATION for the meetings of the American Electric Railway Association and its affiliated associations at the Cleveland convention, Oct. 4-8, are rapidly nearing completion. Sessions of the American Association will be held in the mornings of Monday, Tuesday and Thursday. Those of the affiliated associations will be held in the afternoons of the same days.

All day Wednesday and Friday morn-

ing have been set aside for inspection of the exhibits. Friday afternoon will be devoted to inspection trips to plants of near-by manufacturers.

All meetings will be held at the Cleveland Public Auditorium and annex, East Sixth Street, between Lakeside and St. Clair Avenues.

Following are the tentative programs for the meetings, as revised by association headquarters to Aug. 27:

AMERICAN ASSOCIATION

Monday Morning, October 4

9 A.M. TO 10 A.M.

REGISTRATION AND DISTRIBUTION OF BADGES at booths at entrance to Cleveland Public Auditorium.

10 A.M. TO 1 P.M.

Meeting Held in West Wing of Auditorium

General Topic: Unified Transportation Service in the Public Interest.

ADDRESS OF WELCOME.

ADDRESS OF PRESIDENT.

ADDRESS—"Selling the Service—Intercity," by Britton I. Budd, president Chicago Rapid Transit Company, Chicago.

ADDRESS—"Selling the Service—City," by Thomas Fitzgerald, vice-president Pittsburgh Railways, Pittsburgh, Pa.

ADDRESS—"Modern Equipment," by Samuel M. Curwen, president the J. G. Brill Company, Philadelphia, Pa.

ADDRESS—"The Car—Show Window of the Industry," by Edwin B. Meissner, president and general manager St. Louis Car Company, St. Louis, Mo.

ADDRESS—"Manufacturer Co-operation," by E. F. Wickwire, vice-president the Ohio Brass Company, Mansfield, Ohio.

Discussion.

Tuesday Morning, Oct. 5

10 A.M. TO 1 P.M.

Meeting Held in West Wing of Auditorium

General Topic: Street Congestion—Let's Reduce It.

REPORT OF COMMITTEE ON NOMINATIONS AND ELECTION OF OFFICERS.

ADDRESS—"Progress and Trends During Year," by Lucius S. Storrs, managing director American Electric Railway Association, New York, N. Y.

ADDRESS—"The High Cost of Congested Streets," by Col. C. O. Sherrill, city manager, Cincinnati, Ohio.

ADDRESS—"The Business of Street Management," by G. B. Anderson, man-

ager of transportation Los Angeles Railway, Los Angeles, Cal.

ADDRESS—"Provide Now for Future Transportation," by Col. Sidney D. Waldon, president Rapid Transit Commission, Detroit, Mich.

ADDRESS—"Co-operation and Traffic Control," by R. F. Kelker, Jr., Kelker, De Leuw & Company, engineers, Chicago, Ill.

Discussion.

Tuesday Evening, Oct. 5

General Evening Session

9 P.M.

Arena Floor of Auditorium

MEETING UNDER AUSPICES OF THE ADVISORY COUNCIL.

OPENING ADDRESS by B. C. Cobb, vice-president Hodenpyl, Hardy & Company, Inc., New York, N. Y., chairman Advisory Council.

ADDRESS—"The Public Service—Its Obligations and Rewards" (speaker to be announced later).

AWARD OF CHARLES A. COFFIN PRIZE—F. R. Coates, Henry L. Doherty & Company, New York, N. Y., president American Electric Railway Association.

ADDRESS OF ACCEPTANCE.

INFORMAL DANCING.

Wednesday, Oct. 6

This entire day has been set aside by the officers of the association for the inspection of manufacturers' exhibits. No formal convention sessions of the

American Association or the affiliated associations will be held.

The official business of the day is the inspection of exhibits and every delegate is urged to take advantage of the opportunity to visit the manufacturers' booths, where the most modern equipment and latest appliances are on display.

Thursday Morning, Oct. 7

10 A.M. TO 1 P.M.

Meeting Held in West Wing of Auditorium

General Topic: New Capital, Where and How to Get It.

ADDRESS—"Modern Management and Operation," by R. F. Carbutt, Henry L. Doherty & Company, New York, N. Y.

ADDRESS—"Electric Railway Financing," by H. L. Stuart, president Halsey, Stuart & Company, Inc., Chicago, Ill.

ADDRESS—"Intercity Business Possibilities," by T. A. Kenney, Hodenpyl, Hardy & Company, Inc., New York, N. Y.

ADDRESS—"Provide Now for Future Transportation," by Alfred H. Swayne, vice-president General Motors Company, New York, N. Y.

ADDRESS—"Industrial Education," by Edward Dana, general manager Boston Elevated Railway, Boston, Mass.

DEMONSTRATION—"Foremen's Conference," conducted by H. H. Norris, educational director Boston Elevated Railway, Boston, Mass.

General Discussion.

AWARD—*Forbes Magazine* Public Relations Contest.

AWARD—*Electric Traction* Speed Contest.

REPORTS OF SPECIAL COMMITTEES.

UNFINISHED BUSINESS.

NEW BUSINESS.

INSTALLATION OF OFFICERS.

ADJOURNMENT.

Friday Morning, Oct. 8

10 A.M. TO 12 NOON

Inspection of Manufacturer's Exhibits.

AFTERNOON

Inspection of Local Manufacturing Plants.

ACCOUNTANTS' ASSOCIATION

Monday Afternoon, Oct. 4

2 P.M. TO 4:30 P.M.

Meeting Held in Room E-251, Mezzanine Floor, Auditorium

ADDRESS OF WELCOME—By Urban F. von Rosen, C. P. A., accountant for the City Street Railroad Commissioner, Cleveland, Ohio.

ANNUAL ADDRESS OF THE PRESIDENT.

ANNUAL REPORT OF THE EXECUTIVE COMMITTEE.

ANNUAL REPORT OF THE SECRETARY-TREASURER.

APPOINTMENT OF CONVENTION COMMITTEES ON (a) Resolutions; (b) Nominations.

REPORT OF COMMITTEE ON BUS ACCOUNTING—M. W. Glover, general auditor West Penn Railways, Pittsburgh, Pa., chairman.

Discussion.

REPORT OF COMMITTEE ON STANDARD CLASSIFICATION OF ACCOUNTS—M. W. Glover, general auditor West Penn Railways, Pittsburgh, Pa., chairman.

Discussion.

ADDRESS—"The Accountant," by Carl H. Nau, C. P. A., president, Nau, Rusk & Swearingen, certified public accountants, Cleveland, Ohio.

Tuesday Afternoon, Oct. 5

2 P.M. TO 4:30 P.M.

Meeting Held in Lecture Room, Exhibition Hall, Auditorium

Joint Session 2 p.m. to 3 p.m. Accountants' and Engineering Associations.

REPORT OF JOINT COMMITTEE ON ENGINEERING ACCOUNTING—T. B. Mac Rae, general auditor Chicago Rapid Transit Company, Chicago, Ill., and Robert B. Rifenerick, consulting engineer, Toledo, Ohio, co-chairmen.

Discussion.

ADDRESS—"A Message on Depreciation," by Henry E. Riggs, professor of civil engineering University of Michigan, Ann Arbor, Mich.

Discussion.

At the close of the discussion of the above paper, the members of the Accountants' Association will adjourn to their own meeting room (E-251), where the Accountants' Session will be continued.

REPORT OF COMMITTEE ON STORES ACCOUNTING—R. A. Weston, special accountant The Connecticut Company, New Haven, Conn., chairman.

Discussion.

REPORT OF COMMITTEE ON FARE COLLECTION—E. A. Tuson, general auditor Public Service Railway, Newark, N. J., chairman.

*Discussion.***Wednesday, Oct. 6**

This entire day has been set aside by the officers of the association for the inspection of manufacturers' exhibits. No formal convention sessions of the American Association or the affiliated associations will be held.

The official business of the day is the inspection of exhibits and every delegate is urged to take advantage of the opportunity to visit the manufacturers' booths, where the most modern equipment and latest appliances are on display.

"GET TOGETHER LUNCHEON" at 12:30 at one of the hotels. This is to be an informal gathering of accountants and railway men interested in accounting subjects for the purpose of becoming better acquainted.

Thursday Afternoon, Oct. 7

2 P.M. TO 4:30 P.M.

Meeting Held in Room E-251, Mezzanine Floor, Auditorium

REPORT OF COMMITTEE REPRESENTING THE ACCOUNTANTS' ASSOCIATION AT THE ANNUAL CONVENTION OF THE NATIONAL ASSOCIATION OF RAILWAY AND UTILITY COMMISSIONERS—W. L. Davis, auditor Lehigh Valley Transit Company, Allentown, Pa., chairman.

Discussion.

REPORT OF THE COMMITTEE ON

FREIGHT ACCOUNTING—O. H. Bernd, Secretary Des Moines City Railway, Des Moines, Ia., chairman.

Discussion.

REPORT OF COMMITTEE TO REVIEW THE PROCEEDINGS OF THE ACCOUNTANTS' ASSOCIATION—J. E. Heberle, assistant to the president, the Capital Traction Company, Washington, D. C., chairman.

Discussion.

ADDRESS—"Income Taxes," by Albert F. Elkins, manager Peat, Marwick,

Mitchell & Company, certified public accountants, Cleveland, Ohio.

Discussion.

REPORTS OF CONVENTION COMMITTEES: (a) Resolutions; (b) Nominations.

ELECTION OF OFFICERS.

INSTALLATION OF OFFICERS.

PRESENTATION OF PAST-PRESIDENT'S BADGE.

INFORMAL ROUND-TABLE DISCUSSION OF ACCOUNTING MATTERS.

ADJOURNMENT.

CLAIMS ASSOCIATION**Monday Afternoon, Oct. 4**

2 P.M. TO 5:30 P.M.

Meeting Held in Second Floor Lounge, Auditorium

READING OF MINUTES OF PREVIOUS MEETING.

ANNUAL ADDRESS OF PRESIDENT.

ANNUAL REPORT OF EXECUTIVE COMMITTEE.

ANNUAL REPORT OF SECRETARY-TREASURER.

APPOINTMENT OF THE NOMINATING COMMITTEE.

ADDRESS—"Accident Prevention and Claims," by Charles B. Scott, president National Safety Council, Chicago, Ill.

PAPER—"Methods of Discouraging Litigation in Accident Claims," by Trevor C. Neilson, claim agent East St. Louis & Suburban Railway, East St. Louis, Ill.

PAPER—"Automobile Claims and Methods of Handling Them Where Insurance Companies Are Involved," by William G. Marshall, superintendent of claims, Pittsburgh Railways, Pittsburgh, Pa.

PAPER—"Bonus System—Its Value in Claim Work," by G. T. Hellmuth, claims attorney Chicago, North Shore & Milwaukee Railroad, Chicago, Ill.

PAPER—"Bus Accidents — Their Causes and Successful Methods of Prevention," by H. V. Drown, general claim agent Public Service Railway, Newark, N. J.

*Discussion.***Tuesday Afternoon, Oct. 5**

2 P.M. TO 5:30 P.M.

Meeting Held in West Wing of Auditorium

JOINT SESSION, CLAIMS AND TRANSPORTATION & TRAFFIC ASSOCIATIONS.

REPORT OF COMMITTEE ON TRAFFIC CONGESTION—A. R. Myers, president Erie Railways, Erie, Pa., chairman.

FORMAL DISCUSSION—By a traffic captain, a traffic engineer, a consulting engineer and a railway operating engineer.

GENERAL DISCUSSION.

REPORT OF JOINT COMMITTEE ON ACCIDENT PREVENTION—M. W. Bridges, safety engineer Chicago Rapid Transit Company, Chicago, Ill., and H. K. Bennett, safety manager United Electric Railways, Providence, R. I., co-chairmen.

FORMAL DISCUSSION by Claims men and Transportation men.

GENERAL DISCUSSION.

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Thursday Afternoon, Oct. 7

2 P.M. TO 5:30 P.M.

Meeting Held in Second Floor Lounge, Auditorium

PAPER—"Motion Pictures as a Means of Combating Fraudulent Suits," by C. M. McRoberts, General Claim Agent, Los Angeles Railway Corporation, Los Angeles, Cal.

REPORT OF COMMITTEE ON MEDICAL AND SURGICAL WORK—Dr. Frederick L. Mosser, surgeon Third Avenue Railway System, New York, N. Y., chairman.

PAPERS—"Practical Methods of Obtaining Greater Efficiency from the Medical Departments of the Street Railway Companies," by Dr. Frederick L. Mosser, surgeon Third Avenue Railway System, New York, N. Y.; Dr. Hart E. Fisher, Chief Surgeon, Chicago Rapid Transit Company.

PAPER—"Observation on the Physical Examination of Electric Railway Employees," by Doctor Benjamin E. Sibley, surgeon Boston Elevated Railway, Boston, Mass.

PAPER—"The Uses and Value of Medical Testimony," by Dr. H. Stuart MacLean, chief surgeon Virginia Electric & Power Company, Richmond, Va.

PAPER—"Health Service Examination and Organization of a Medical Staff for the Care of Injured Patrons of a Public Utility," by Dr. Ernest W. Miller, surgeon Milwaukee Electric Railway & Light Company.

PAPER—"Should Industrial Surgery Be Done by Industrial Surgeons?" by Dr. Arthur S. Driscoll, surgeon Richmond Light & Railroad Company, Staten Island, New York, N. Y.

REPORT OF COMMITTEE ON RESOLUTIONS.

REPORT OF COMMITTEE ON NOMINATIONS.

ELECTION OF OFFICERS.

INSTALLATION OF OFFICERS.

PRESENTATION OF PAST-PRESIDENT'S BADGE.

ADJOURNMENT.

ENGINEERING ASSOCIATION

Monday Afternoon, Oct. 4

2 P.M. TO 5:30 P.M.

*Meeting Held in Lecture Room,
Exhibition Hall, Auditorium*

General Subject: Way and Structures.

ADDRESS OF PRESIDENT.

REPORT OF EXECUTIVE COMMITTEE.

REPORT OF SECRETARY-TREASURER.

REPORTS OF SPECIAL WAY AND STRUCTURES COMMITTEES:

Review of Engineering Manual—W. R. Dunham, Jr., executive engineer department of street railways, Detroit, Mich., chairman.

Design of Switch Tongues and Hard Centers for Special Trackwork (progress report)—E. M. T. Ryder, way engineer Third Avenue Railway System, New York, N. Y., chairman.

CO-OPERATION WITH WELDED RAIL JOINT COMMITTEE—W. W. Wysor, chief engineer United Railways & Electric Company, Baltimore, Md., chairman.

Discussion.

Surface Hardening of Rails—A. T. Spencer, assistant to general manager Toronto Transportation Commission, Toronto, Canada, chairman.

Discussion.

Design of Steam and Electric Railway Crossings—*V. Angerer, vice-president William Wharton, Jr. & Company, Inc., Easton, Pa., chairman.

Arc Welding Processes for Repairs to Rails and Manganese Steel (progress report)—Chester F. Gailor, consulting engineer, New York, N. Y., chairman.

Discussion.

Design of Buildings for Maintenance, Storage and Operation of Buses, and Design of Joint Railway and Bus Terminals—John R. McKay, chief engineer Indiana Service Corporation, Fort Wayne, Ind., chairman.

Discussion.

ELECTRIC RAILWAY CARHOUSES AND CARS—H. E. Bachman, superintendent of distribution Public Service Railway, Newark, N. J., chairman.

REPORT OF STANDING COMMITTEE ON WAY AND STRUCTURES—H. H. George, assistant to chief engineer, Public Service Production Company, Newark, N. J., chairman.

REPORT OF SPECIAL COMMITTEE ON RAIL CORRUGATION (progress report)—W. W. Wysor, chief engineer United Railways & Electric Company, Baltimore, Md., chairman.

Discussion.

REPORT OF COMMITTEE ON WOOD PRESERVATION—A. P. Way, engineering department, American Electric Power Company, Philadelphia, Pa., chairman.

Discussion.

Tuesday Afternoon, Oct. 5

2 P.M. TO 5:30 P.M.

*Meeting Held in Lecture Room,
Exhibition Hall, Auditorium*

Joint Session 2 p.m. to 3 p.m., Engineering and Accountants' Associations.

General Subject: Equipment

REPORT OF JOINT COMMITTEE ON ENGINEERING ACCOUNTING—Robert B. Rifenberick, consulting engineer, Toledo, Ohio, and T. B. MacRae, auditor Chicago Rapid Transit Company, Chicago, Ill., co-chairmen.

*Deceased, May 5, 1926.

ledo, Ohio, and T. B. MacRae, auditor Chicago Rapid Transit Company, Chicago, Ill., co-chairmen.

Discussion.

ADDRESS—"A Message on Depreciation," by Henry E. Riggs, professor of civil engineering, University of Michigan, Ann Arbor, Mich.

Discussion.

At the close of the discussion of the above paper the members of the Accountants' Association will adjourn to their own meeting room to continue their regular program, the engineers remaining in the Lecture Room where the Engineering Association will be continued.

REPORTS OF COMMITTEES:

Engineering Symbols—H. W. Codding, assistant engineer Public Service Production Company, Newark, N. J., chairman.

Discussion.

Engineering Manual—Charles R. Harte, construction engineer The Connecticut Company, New Haven, Conn., chairman.

Discussion.

Heavy Electric Traction—H. F. Brown, assistant electrical engineer, New York, New Haven & Hartford Railroad, New Haven, Conn., chairman.

Discussion.

Equipment—P. V. C. See, superintendent car equipment Northern Ohio Power & Light Company, Akron, Ohio, chairman.

Discussion.

Unification of Car Design—H. H. Adams, superintendent shops and equipment, Chicago Surface Lines, Chicago, Ill., chairman.

Discussion.

Reduction of Noise in Car Operation—H. S. Williams, assistant superintendent of equipment Department of Street Railways, Detroit, Mich., chairman.

Discussion.

Wheel Mounting and Check Gauges—C. W. Squier, associate editor ELECTRIC RAILWAY JOURNAL, New York, N. Y., chairman.

Discussion.

Tuesday Afternoon, Oct. 5

2 P.M. TO 4 P.M.

PURCHASING AGENTS AND STOREKEEPERS

Session held under the auspices of the Committee on Purchases and Stores, Engineering Association.

Meeting Held in Room D-245, Mezzanine Floor, Auditorium

ADDRESS OF WELCOME by Charles R. Harte, president American Electric Railway Engineering Association.

INFORMAL TALK—Frank R. Coates, president American Electric Railway Association.

REPORT OF COMMITTEE ON PURCHASES AND STORES—P. F. McCall, manager of commissary, Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., chairman.

REPORTS OF OTHER COMMITTEES.

Discussion of committee reports.

ADDRESS—"Co-ordination of Operating Budget with Purchases of Material," by Dr. Charles Reitel, head of Department of Accounting and Industry, University of Pittsburgh.

ADDRESS—"The Relation of Purchases and Stores to the Utility Business," by William E. Wood, vice-president Virginia Electric & Power Company, Richmond, Va.

ADDRESS—"Saving in Time Which Could Be Made If Purchasers of Materials Would Supply Full Catalog Information When Ordering Equipment Supplies," by Henry S. Day, manager transportation division Westinghouse Electric & Manufacturing Company, Boston, Mass.

General Discussion.

Wednesday, Oct. 6

This entire day has been set aside by the officers of the association for the inspection of manufacturers' exhibits. No formal convention sessions of the American Association or the affiliated associations will be held.

The official business of the day is the inspection of exhibits and every delegate is urged to take advantage of the opportunity to visit the manufacturers' booths, where the most modern equipment and latest appliances are on display.

Thursday Afternoon, Oct. 7

2 P.M. TO 5:30 P.M.

Meeting Held in Lecture Room, Exhibition Hall, Auditorium

General Subject: Power.

REPORTS OF COMMITTEES:

Power Generation and Conversion—L. D. Bale, superintendent of power, The Cleveland Railway, Cleveland, Ohio, chairman.

Discussion.

Power Transmission and Distribution—Charles H. Jones, general manager Chicago, South Shore & South Bend Railroad, Chicago, Ill., chairman.

Discussion.

Automatic Substations—Adrian Hughes, Jr., superintendent of bus transportation United Railways & Electric Company, Baltimore, Md., chairman.

Discussion.

Purchases and Stores—P. F. McCall, manager of commissary, Chicago, North Shore & Milwaukee Railroad, Highwood, Ill., chairman.

Discussion.

Committee to Co-operate with the U. S. Department of Commerce on Simplification and Standardization—R. H. Dalglish, chief engineer Capital Traction Company, Washington, D. C.

REPORT OF REPRESENTATIVES ON THE MAIN COMMITTEE OF THE AMERICAN ENGINEERING STANDARDS COMMITTEE—Charles R. Harte, construction engineer, the Connecticut Company, New Haven, Conn., and R. H. Dalglish, chief engineer the Capital Traction Company, Washington, D. C., representatives.

REPORT OF COMMITTEE ON NOMINATIONS—L. C. Datz, care of Newman Saunders & Company, Inc., St. Louis, Mo., chairman.

Discussion.

ELECTION OF OFFICERS.

INSTALLATION OF OFFICERS.

PRESENTATION OF PAST PRESIDENTS' BADGES.

ADJOURNMENT.

TRANSPORTATION AND TRAFFIC ASSOCIATION

Monday Afternoon, Oct. 4

2 P.M. TO 5:30 P.M.

Meeting Held in West Wing of Auditorium

ANNUAL ADDRESS OF PRESIDENT.
ANNUAL REPORT OF EXECUTIVE COMMITTEE.
ANNUAL REPORT OF SECRETARY-TREASURER.
APPOINTMENT OF CONVENTION COMMITTEE ON RESOLUTIONS.
REPORT OF COMMITTEE ON NOMINATIONS.

ELECTION OF OFFICERS.
REPORT OF COMMITTEE ON MERCHANDISING TRANSPORTATION. This report is treated under six general headings and will be presented as follows:

1. *Courtesy, Salesmanship and Appearance of Transportation Employees*—R. N. Graham, manager of railways Pennsylvania-Ohio Electric Company, Youngstown, Ohio, chairman.

2. *Special Classes of Service and Rates of Fare*—C. D. Smith, general manager Beaver Valley Traction Company, New Brighton, Pa.

3. *Maximum Use of Existing Facilities*—S. E. Emmons, assistant general manager United Railways & Electric Company, Baltimore, Md.

4. *General Company Interest in Civic Problems*—J. B. Donley, director of public relations, Pittsburgh Railways, Pittsburgh, Pa.

5. *Advertising*—A. C. Spurr, general manager Wheeling Traction Company, Wheeling, W. Va.

6. *Design and Care of Equipment*—John A. Dewhurst, associate editor ELECTRIC RAILWAY JOURNAL, New York, N. Y.

Discussion.

PUBLICITY SHOP TALK

Series of talks by practical railway and advertising men.

Tuesday Afternoon, Oct. 5

2 P.M. TO 5:30 P.M.

Meeting Held in West Wing of Auditorium

JOINT SESSION, TRANSPORTATION AND TRAFFIC AND CLAIMS ASSOCIATIONS.

REPORT OF COMMITTEE ON TRAFFIC CONGESTION—A. R. Myers, president Erie Railways, Erie, Pa., chairman.

Formal Discussion by a traffic captain, a traffic engineer, a consulting engineer and a railway operating engineer.

GENERAL DISCUSSION.

REPORT OF JOINT COMMITTEE ON ACCIDENT PREVENTION—M. W. Bridges, safety engineer Chicago Rapid Transit Company, Chicago, Ill., and H. K. Bennett, safety manager United Electric Railways, Providence, R. I., co-chairmen.

Formal Discussion by transportation men and claims men. (Names to be announced later.)

GENERAL DISCUSSION.

Wednesday, Oct. 6

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No formal convention sessions of the American Association or the affiliated associations will be held.

The official business of the day is the inspection of exhibits and every delegate is urged to take advantage of the opportunity to visit the manufacturers' booths where the most modern equipment and latest appliances are on display.

Thursday Afternoon, Oct. 7

2 P.M. TO 5:30 P.M.

Meeting Held in West Wing of Auditorium

REPORT OF COMMITTEE ON BUS OPERATION.

This report is treated under fourteen general headings and will be presented as follows:

1. *Introduction*—J. B. Stewart, Jr., general manager Cincinnati Street Railway, Cincinnati, Ohio, chairman.

2. *Rates of Fare—Interurban*—E. D. Dreyfus, advisory engineer West Penn Railways, Pittsburgh, Pa., and D. A. Scanlon, general superintendent of railways, Northern Ohio Power & Light Company, Akron, Ohio.

3. *Taxation During Development Period*—C. B. Cooke, Jr., president Westchester Street Railway, Philadelphia, Pa.

4. *Proper Agency to Operate Buses in Competitive Territory—Steam or Electric Railroads*—A. Shapiro, assistant general manager Washington Rapid Transit Company, Washington, D. C.

5. *Terms of Franchise*—S. W. Greenland, care of Newman, Saunders & Company, St. Louis, Mo.

6. *Chartered Coach and Bus Operations*—Adrian Hughes, Jr., superintendent of bus transportation, United Railways & Electric Company, Baltimore, Md.

7. *Package Express Delivery, Including Handling of U. S. Mail*—R. B. Hill, superintendent of operation Los Angeles Railway, Los Angeles, Cal.

8. *Utilization of Motor Buses in Developing Better Public Relations*—C. H. Chapman, manager The Connecticut Company, Waterbury, Conn.

9. *Problems of Supporting Non-paying Route Extensions*—R. H. Smith, Electric Bond & Share Company, New York, N. Y.

10. *Underlying Reasons for Better Service at Higher Rates of Fare*—D. L. Fennell, superintendent of transportation Kansas City Railways, Kansas City, Mo.

11. *Steps to Be Taken to Protect Rate Base with Respect to Development Expense*—A. T. Warner, assistant to vice-president in charge of operation Public Service Railway, Newark, N. J.

12. *Tire Mileage Contracts*—M. L. Harry, division manager Illinois Power & Light Corporation, Decatur, Ill.

13. *Liability Insurance*—R. N. Graham, manager of railways, Pennsylvania-Ohio Electric Company, Youngstown, Ohio.

14. *Double-Deck Bus Operations*—B. W. Arnold, assistant general manager Chicago, North Shore & Milwaukee Railroad, Milwaukee, Wis.

REPORT OF COMMITTEE ON RESOLUTIONS.

INSTALLATION OF OFFICERS.

PRESENTATION OF PAST PRESIDENT'S BADGE.

ADJOURNMENT.

Inspection of Manufacturing Plants Being Arranged

PURSUANT to requests from railway operators and engineers, various manufacturers in the Cleveland district are planning inspection trips through their factories at the time of the annual convention. Several of the manufacturers, in advising the association of their plans, stated that they did not wish to do anything which would be detrimental to the attendance at either the convention meetings or the convention exhibit. They therefore suggested that a definite time be designated for such inspection trips.

The executive committee of the association discussed the situation and voted that no inspection trips should be planned until 12 o'clock noon, Friday, Oct. 8. After this time the convention meetings will be over and the exhibits closed. Therefore, inspection trips scheduled from this time will in no way interfere with the convention.

Those who desire to make such inspection trips are urged to schedule them Friday afternoon, Oct. 8, and Saturday, Oct. 9. The manufacturers are requested to make their plans in accordance with the above schedule and thus avoid inspection trips during the time the convention is in session. This, it is believed, will avoid any dissatisfaction on the part of the exhibitors and will not detract from the attendance at the convention meetings.

Information relative to the various inspection trips will be published from time to time and will appear also in the final official convention program.

Transportation and Tickets to the Convention

EVERY trunk line passenger association in the country has authorized the sale of round-trip tickets to the Convention in Cleveland at the rate of one and one-half the single way fare on presentation of the official certificate on purchase of ticket at the local ticket office.

One certificate is good for any member of the association, including dependent members of his family. These round-trip tickets may be purchased for the going trip beginning Sept. 30 to Oct. 6 inclusive. On the return trip the passenger must reach original starting point not later than midnight of Oct. 14 and must make this trip by the same route as the going trip. Regulations of the roads regarding limited trains and stop-over privileges will be adhered to.

Return tickets will be validated at Cleveland, Ohio, by agents at the regular ticket offices of the lines over which tickets read into that city or at the registration desk, where agents will be available from Oct. 4 to 8 inclusive.

A special train, composed of modern, all-steel Pullman equipment for day service will be operated by the New

York Central Railroad from Chicago on the following schedule:

Lv. Chicago 10:30 a.m., C.T., Sunday, Oct. 3
 Lv. La Porte 11:51 a.m., C.T., Sunday, Oct. 3
 Lv. So. Bend 12:25 p.m., C.T., Sunday, Oct. 3
 Lv. Elkhart 12:55 p.m., C.T., Sunday, Oct. 3
 Lv. Toledo 4:45 p.m., E.T., Sunday, Oct. 3
 Ar. Cleveland 7:10 p.m., E.T., Sunday, Oct. 3

Special Pullmans for delegates only will be reserved for those wishing to leave Chicago at 11:10 p.m., Sunday, Oct. 3, on the Chicago-Cleveland special, arriving in Cleveland at 7:40 a.m., Monday. If enough reservations are made for this train to run as a special, the train will immediately follow the regular 11:10 p.m. train.

Delegates from northern Indiana can have reservations made for the special leaving Chicago at 10:30 a.m., Sunday, Oct. 3, to be taken at La Porte at 11:51 a.m., South Bend 12:25 p.m., Elkhart, 12:55 p.m.

Michigan delegates wishing to leave Detroit Sunday night by boat can purchase round-trip reduced fare tickets to Cleveland and return. These will be honored by the Detroit and Cleveland Navigation Company, leaving Detroit at 11:30 p.m., arriving in Cleveland at 6:45 a.m.

Railroad tickets for these special trains must be secured from railroad companies' ticket agents. Pullman reservations should be made with H. J. Kenfield, vice-chairman transportation committee, 431 South Dearborn Street, Chicago, Ill.

Reserve Seats for Theater Party on Oct. 6

ONE of the entertainment features scheduled for the Cleveland convention is a special theater party to be given at B. F. Keith's Palace Theater

COMING MEETINGS
OF
Electric Railway and Allied Associations

Sept. 9—Central Electric Railway Master Mechanics' Association, annual convention, Hotel Rieger, Sandusky, Ohio.

Sept. 10-11—Central Electric Traffic Association, annual meeting, Yellow Banks Hotel, Webster Lake, Ind.

Sept. 17-18—Mid-West Claim Agents Association, sixth annual convention, Elms Hotel, Excelsior Springs, Mo.

Oct. 4-8—American Electric Railway Association, annual convention and exhibits, Public Auditorium, Cleveland, Ohio.

Oct. 10-15—Congress International Tramway, Local Railway and Motorbus Association, Barcelona, Spain.

Oct. 25-29—Annual Congress and Exhibit, National Safety Council, Detroit, Mich.

Nov. 16-18—Society of Automotive Engineers, National Transportation and Service Meeting, Boston, Mass.

November 16-19—American Welding Society, fall meeting and International Welding and Cutting Exposition, Buffalo, New York.

on the evening of Wednesday, Oct. 6. The Palace seats 3,200 persons and is Cleveland's finest vaudeville theater. Every seat has been reserved for dele-

Cleveland Convention Facilities Progress



WORK continues to be rushed on the additional facilities for the coming convention and exhibit in Cleveland. The third view of the work, from approximately the same point as those published in this paper last week, shows 25 bays of steel erected, the plastering and roofing almost completed. Plumbing and service lines are all installed. More than 60 per cent of the concrete floor is in place, only the area in the immediate foreground re-

maining to be done. Meeting rooms are ready for the ceilings and the interior of the structure shown for the placing of service lines and equipment. At the right, the Cleveland Railway is completing the paving of the tracks in East Third Street, which provide the connection between the steam roads and the convention and service facilities. This picture was taken Friday afternoon, Aug. 20, seven days after the last one published.

gates and their guests so that a 100 per cent A.E.R.A. evening is assured. Moving pictures taken at the convention will be shown, while a number of the acts will deal with convention celebrities and convention events.

In addition to these special features, several of the country's outstanding entertainers have been engaged and at least nine of the best vaudeville acts will be selected from other Keith theaters in Ohio. Transportation facilities have been arranged to bring these performers to Cleveland and an all-star entertainment is anticipated.

The committee in charge has mailed a notice to all members of the association. Seat reservations at a fixed price of \$1.50 each may be made in advance. These reservations will be assigned strictly in the order of receipt—first come, first served. While the theater has ample capacity, early reservations are essential to assure the best seats.

Fred Dell, director of exhibits of the American Electric Railway Association, reported that at the close of business of Aug. 27 the total square footage assigned to prospective exhibitors at the convention to be held in Cleveland in October was 114,393 sq.ft.

News of Other Associations

Central Master Mechanics to Meet in Sandusky on Sept. 9

NOTICE has been sent out to members of the Central Electric Railway Master Mechanics Association that the next meeting has been set for Sept. 9. It will be held at the Hotel Rieger, Sandusky, Ohio, beginning at 9 a. m. Eastern standard time.

The meeting will be devoted to four-minute talks by members telling of their greatest accomplishments during the past year. A representative of the Kuhlman Car Company will explain what was accomplished by purchasing freight cars in a bulk order.

In the afternoon the standards committee and the safety appliance committee will present reports, following which an inspection will be made of the Sandusky shops of the Lake Shore Electric Railway.

Central Traffic Men Meet Sept. 10-11

IN ACCORDANCE with the action taken at its last meeting, the next regular meeting of the Central Electric Traffic Association will be held at the Yellow Banks Hotel, Webster Lake, Ind., on Sept. 10-11.

The morning session on Sept. 10 will be called to order at 9 o'clock and will be in the nature of a round-table discussion. Necessary committee work will be done the same afternoon. The session of Sept. 11 will be devoted to reports of committees and such other business as may be properly presented.

The News of the Industry

Wage Terms Fixed in Detroit

The tentative wage increase for the platform men of the Department of Street Railways at Detroit, Mich., announced the latter part of June, which provides an advance of 2 cents an hour, was put into effect after having been agreed to by the employees. It has been estimated that the increase will cost the department approximately \$210,000 annually, but no increase in fares has been necessary and no increase is anticipated as a result of the added cost of operation due to the wage increase.

The tentative agreement provided that the wage increase should take effect in two steps of 1 cent each, on July 1 and Aug. 1, so the full effect of the increase will be included in the report of operating expenses for the month of August.

The tentative agreement provides the following rates for motormen, conductors and motor coach operators: First six months, 67 cents an hour; second six months, 71 cents an hour; thereafter, 75 cents an hour. The hourly rate for one-man car operators and operators of motor coaches or buses seating 35 passengers or more are: First six months, 72 cents; second six months, 76 cents; thereafter, 80 cents.

A number of special requests and provisions were included affecting scheduled weekday runs, the percentage of total number of runs to be completed within certain specified consecutive hours, and the allowance of additional time bonuses for long runs.

Local Service Withdrawn in Delaware, Ohio

City service at Delaware, Ohio, was discontinued on Aug. 20 by the Columbus, Delaware & Marion Electric Company in keeping with its declaration that the moment street improvements on thoroughfares traveled by the city cars were begun the service would stop. Preliminary work on West William Street was started on Aug. 19 and the next day the cars were missing from the city streets.

Since June, 1899, the company has been operating the cars as a requirement of its franchise for right-of-way over Delaware streets for interurban cars. The franchise expired in 1924, but the company continued to operate the cars. When the City Council proposed street improvements, the company served notice it could bear none of the cost and that the cars would be taken off. The company has, however, offered to operate buses in lieu of the cars. Whether or not the city will make any effort to compel the continuation of the operation of the cars is unknown, but such action is not deemed likely.

The company contends that the lines paid \$13 over operating expenses in January, 1914, but that this was the only month in the 27 years of operation by the company that they more than broke even.

The lines were built by a company of Delaware citizens in 1891 at a cost of \$91,000. A few years later they were sold at sheriff's sale to another Delaware company for \$13,500. In 1899 they were purchased by the Columbus, Delaware & Marion Railway, the predecessor to the Columbus, Delaware & Marion Electric Company, for \$55,000.

Matters remained unchanged for several days. Now, however, the City

Council is considering a new franchise presented by the railway and definite action probably will be taken at a meeting of the Council called for Aug. 30. One provision of the new franchise is the installation of a bus service by the railway to take the place of the city street cars, recently discontinued. Under this plan the Council will have the privilege of fixing the fare, but if the fixed rate fails to care for operating expenses in any one month the company reserves the right to increase the fares by steps of 1 cent at a time until operating expenses are met. In no case, however, is the fare to exceed 12 cents. After a reserve fund of \$5,000 has been built up, fares will be lowered.

\$187,000,000 for Rapid Transit at Detroit

Piecemeal Construction of System Suggested—Assessment Plan of Payment for Construction Proposed—Equipment to Be Bought With Funds Secured by Bonds

AN INITIAL rapid transit system proposed for the city of Detroit and adjacent municipalities costing \$187,789,000 and involving a total of 46.6 miles is recommended by the Rapid Transit Commission in its report just submitted to the City Council. The plan calls for four lines, covering routes in both north and south and east and west directions. Of the 46.6 miles of route proposed, 42.7 will be in Detroit, and of the total construction cost, \$172,001,000 is to be borne by Detroit.

The four routes include: Vernor Highway Crosstown line 11.2 miles long, which it is planned to build as the first unit; the Woodward-Fort North and South line, 7.5 miles long; the Salina-McGraw-Grand Boulevard-St. Jean-Crosstown line, 14.3 miles long; and the Grand River-Jefferson-Mount Elliott-Gratiot-West Side and East Side line, 13.6 miles long.

The routes will be submitted to the voters at the November election and if the plans are approved the last step essential to the rapid transit system will have been completed.

Under the plan announced the taxpayers as a whole will pay 17 per cent of the construction costs; property adjacent to the subways and the stations will pay 51 per cent, and 32 per cent of the cost will be borne by the car riders, the law providing that a rate of fare shall be charged sufficient to meet that proportion of the cost.

It is proposed to make each year's budget for the next ten years carry an item of \$4,300,000 for subway purposes, all of which is to be raised by taxation; \$12,900,000 will be raised annually for the next ten years by special assessments levied against property adjacent to the lines.

As only construction costs of the

railroad structures are included in the above figures, mortgage bonds will be issued to buy equipment. These bonds will not be a lien against the city but rather against the equipment itself. The commission reports that the \$172,000,000 construction estimate covers the cost of the railroad structure through the streets, either under, above or on the surface, or the cost of the so-called "permanent way" of the lines in Detroit. This is the cost in which the Detroit public is chiefly interested because the money to meet it must be raised by local assessment and taxation of the city at large.

The commission further states in its report that the cost of equipping the lines for operation, with tracks, signals, cars, power, yards, shops and other equipment appurtenances and for right-of-way real estate will be paid for by the passengers' fares. The equipment bonds will therefore be self supporting.

Among the conclusions set forth by the commission are that the initial system, except for a short length of elevated line made desirable by the exigencies of location, should be constructed as a two-track tunnel way system—that is to say, in subway at stations and in tunnel between stations, thus avoiding the disturbance of the sub-surface structures in the streets to a very large extent, and reducing to a minimum the interference with street traffic during the prosecution of construction work.

It is recommended that because of the limitations imposed by the rapid transit act, a continuous construction program be followed and that work be started in the first year on the Vernor Highway crosstown line, and in each year thereafter on one of the other lines, in succession and in the order noted previously and that the work be

prosecuted continuously so that all of the lines may be completed and placed in operation within the thirteenth year of the construction period—the first within six years, the second within eight years, and the last two within twelve and thirteen years respectively after the construction work begins.

It is recommended that the cost of constructing and equipping the initial system be financed under the "pay as you go" assessment plan already approved by the people by a referendum vote, in order that all of the beneficiaries of such a rapid transit system, the taxpayer, the land owner and the rider, may each pay his proper share of the cost of the system and the service on it.

After studying the commission's recommendations the City Council unanimously carried a motion that the ordinance be placed on order of first and second reading, and a date for a public hearing on the report will be set in the near future.

Safety Move by New York Interurban

As a result of the inquiry conducted by the Public Service Commission relative to speed of interurban cars operated by the Schenectady Railway between Albany and Schenectady, N. Y., the company has agreed to limit the running time of express trains between the two cities to 30 m.p.h. and of local trains to 26 3/4 m.p.h. The railway will also place on its poles at 1,000-ft. distances warning signs to motorists with the legend "Warning, Motorists! Be careful if you cross railroad tracks."

Strike Leader at Indianapolis Apprehended

No action was taken on Aug. 23 by federal authorities relative to bringing Harry Boggs, former president of the Indianapolis street car men's local union, before Judge Robert C. Baltzell of the United States district court for arraignment on a charge of contempt of court. Boggs, it was reported, was desirous of coming into court and entering a plea to the charge.

Boggs is alleged to have incited acts of violence in connection with the strike of the union employees of the Indianapolis Street Railway. He fled from the city shortly before he was cited for contempt of court. He is charged with violating the order of Judge Baltzell, which prohibited any one having knowledge of the order from influencing employees of the railway to violate their labor contracts with the company and go on strike.

Boggs pleaded guilty in the United States District Court on Aug. 25 of a charge of contempt of court in connection with the recent strike. Among other things he was charged with inciting acts of violence by employees of the company by encouraging them to "cut loose." He was charged with violating the order by Judge Robert C. Baltzell which prohibited any acts of violence or other methods of interfering with the operation of the cars. Judge Baltzell took Boggs' case under advisement.

It is understood the court will not

pass sentence on Boggs until Albert Ward, United States District Attorney, returns from a motor trip in the East. Judge Baltzell said he wished to learn more about Boggs' case in order to make his punishment what it should be. Mr. Ward is expected to return by Sept. 1.

In speaking in his own behalf, Boggs told Judge Baltzell that he was appointed president of the local union by Robert B. Armstrong and John M. Parker, two vice-presidents of the national organization, and that he took all his orders from them.

"They called me into a little room every morning before each meeting," Boggs said, "and they told me what to say and do and I did it."

Parker and Armstrong recently were sentenced by Judge Baltzell to 90 days imprisonment in the Marion County jail. They appealed their cases.

Boggs denied that he knew anything about a federal injunction and said that Parker and Armstrong told him he was not violating the law.

The Indianapolis public is hearing little about the strike, even though it never has been called off by the strikers and all attempts to call it off resulted in overwhelming votes in favor of a continuance. There now is no interruption to traffic and for two or three weeks there has been no vandalism.

New York Syndicate Reported to Have Made Proposal to Chicago

An unidentified syndicate of New York bankers, through Judge John Harlan, offered on Aug. 25, to take over Chicago Surface Lines with the bondholders' consent at the present valuation when the franchise expires on Feb. 1. They ask the Mayor for an immediate hearing. They would organize a new company, accept a twenty-year franchise and safeguard present bondholders by refunding all outstanding issues. Prior lien sinking funds bonds senior to the present outstanding bonds would provide the capital for extensions costing \$40,000,000. The syndicate would operate supplementary buses and consolidate with the elevated. They offer to build subways cheaper and faster than other proposals or to lease any city built tubes. The suggestion has aroused a great deal of discussion in Chicago and New York, but the details so far made public are so intangible that except in one or two cases, where the plan has been severely criticised, financiers and others have been loathe to talk about it.

Franchise Requested at Springfield, Ohio

Request for a franchise to operate in the city has been presented to officials of Springfield, Ohio, by the Springfield Suburban Railway. The railway hauls freight to Springfield from Maitland, for two Springfield concerns, The Crowell Publishing Company and The William Bayley Company. Since Feb. 9, 1923, the company has been operated by sufferance, according to City Manager Flack, under a franchise granted originally to the Springfield & Troy Traction Company. This franchise does not expire until March 16, 1928. The

original franchise was granted in 1903 when the first line was built under the direction of former Gov. Asa Bushnell. Later the grant was transferred to the Springfield, Troy & Piqua Traction Company. That company operated the line until Nov. 29, 1916, when the name was changed to the Springfield Terminal & Power Company. In 1922 the road was abandoned following foreclosure proceedings, and in the following year the property was transferred to the Springfield Suburban Railway.

Railway Commissioner Defeated at Nebraska Primary

The Republican primary resulted in a defeat for Thorne A. Browne, chairman of the Nebraska State Railway Commission, and the nomination of John H. Miller, a traveling salesman, who will oppose Floyd L. Bollen, a democratic lawyer, at the election. Mr. Browne was a man of outstanding achievements and ability, who had served seven years as a commissioner following three years as secretary. He handled most of the rate and service cases of the utility with a fairness and understanding of their problems that won regard for him. He wrote the opinion in the Omaha fare case, and that city gave Miller 4,000 majority, a group of socialists leading a fight that made this decision an issue. His defeat, however, was a surprise, as no open opposition developed outside of Omaha. Mr. Browne has resigned from the commission and will begin work on Sept. 15 for the Omaha Chamber of Commerce as its industrial secretary.

New Parking Ordinance Aids Chicago Traffic

Enforcement of the new ordinance which prohibits parking within 50 ft. of traffic signal lights in business districts of Chicago is speeding up the movement of traffic to an unprecedented degree, police and Surface Lines officials say. The restriction is serving to promote better vision at street intersections, facilitate loading of passengers and minimize delay at congested street corners.

A regulation to prevent the blocking of vehicular and pedestrian traffic by building construction companies has also been proposed by the police traffic division.

"Statewide Home Rule Fight Contemplated in Illinois"

Forewarnings of a vigorous statewide fight to place the power to regulate the public utilities of Illinois in the hands of the city governments were given recently between city officials of Peoria, Alton, Kewanee and Jacksonville and Mayor Dever's home rule committee.

Chief among the aims of the conference, announced at that time, was the arrangement of a series of meetings in various cities of the state to spread the gospel of home rule.

Voters are to be urged, it was said, to induce their legislative representatives to take the rate-fixing power out of the jurisdiction of the present

Illinois Commerce Commission and vest it in cities which elect to take it. The proposals for this change, which emanated from the committee on local transportation of the Chicago City Council, have been referred to previously in the ELECTRIC RAILWAY JOURNAL.

Under article six of the commerce commission act, a city may vote on home rule but the number of voters required to sign the referendum peti-

tion is excessively large and, even with that, the regulatory powers which cities would have over their utilities is greatly limited.

Mayor Dever explained that if a city was satisfied with being under the commission's orders it might remain there, but if one was not satisfied then the conference wanted to make it possible for that city to do its own rate fixing for public utilities.

new franchise ordinance, the opportunity for continued delay in the settlement proceedings was removed on Aug. 24 when the City Council voted to permit the company to prepare a list of controversial points to be submitted two weeks hence.

The Council's decision was made during a meeting attended by traction officials, local bankers and Aldermen when a deadlock among the traction representatives threatened to undo much of the encouraging progress recently effected. Henry A. Blair, president of the Surface Lines, requested a delay to permit the various company lawyers to agree on the legislation that will be needed for the new ordinance, but Leonard A. Busby, president of the Chicago City Railway, and Britton I. Budd, president of the Chicago Rapid Transit Company, were in favor of pro-

Plans for Chicago's Transportation

Subway Advisory Commission Proposes Unified System with \$36,000,000 Program of Rapid Transit Construction—Modern Elevated Structures Favored

CONSOLIDATION of Chicago's rapid transit and surface car systems is considered fundamental in the report of the sub-committee on subways reporting to the local transportation committee of the Chicago City Council. Limited subways in the central part of the city are recommended, the trackage so built as to become elevated upon entering territory in outlying sections, when the damage to abutting property becomes low enough to make the elevated more economical.

The tone of the report is distinctly favorable to modern elevated structures but condemns forcibly the present elevated lines in Chicago and New York which are characterized in the report as noisy in operation and unsightly in their design.

Special assessments to property benefited are definitely stated to be the logical means of financing at least 55 per cent of the cost of the improvements, making due allowance for damage to property directly abutting elevated structures to be constructed. Part of the special assessment may be raised, according to the recommendations, by a voluntary subscription plan, the balance of the construction cost to come from the traction fund providing that such action were allowed by the court.

ESTIMATED COST \$36,400,000

The sixteen recommendations of the report are quite specific. They propose the consolidation into one company of the street railways constituting the Chicago Surface Lines with the Chicago Rapid Transit Company, and that the transportation committee take the initiative and draft such ordinances as are necessary to bring about the consolidation. Such amendment of the State Constitution as is necessary to grant power to the city to make improvements to be paid for in part by special assessment of the property that would be benefited.

As to routes, extensions of the elevated on Ashland Avenue, and on Wells and Polk Streets are planned. A subway on State Street and one on Washington Street, Jackson Boulevard and Michigan Avenue, all main arteries in the traffic plan, are proposed.

In each case the recommendation provides specifically for the method of financing in part by special assessment of property.

In a summary of costs the report

presents an estimate of \$36,400,000 covered by the following general items:

	State Street Subway	Washington- Michigan- Jackson Bl'vd Subway	Total
Train level including stations.....	\$16,900,000	\$9,900,000	\$26,800,000
Pedestrian level.....	4,050,000	1,450,000	5,500,000
Total structures.....	\$20,950,000	\$11,350,000	\$32,300,000
Operating equipment.....	3,000,000	1,100,000	4,100,000
Grand total.....	\$23,950,000	\$12,450,000	\$36,400,000

The report, dated August, 1926, was formally presented to the committee at a meeting on Aug. 23. On the following day the sub-committee on traction program met with members of the transportation interests, represented by Leonard A. Busby for the Chicago City Railway and associated lines and Weymouth Kirkland for Henry A. Blair of the Chicago Railways. These companies comprise the Chicago Surface Lines, now operating all of the street railway cars in Chicago. The franchises of these two companies expire Jan. 31, 1927. Britton I. Budd appeared for the Chicago Rapid Transit Company. Banks were represented by Frank O. Wetmore, chairman of the board First National Bank; A. W. Harris, president Harris Trust Company, and J. E. Blunt, vice-president Illinois Merchants Trust Company.

The program of attack in the construction of suitable ordinances and necessary legislation was discussed. Opinion was divided between the necessity of first agreeing on a franchise and then seeking necessary enabling legislation or the reverse of this program. Mr. Blair has heretofore favored the enactment of enabling legislation before considering the context of a franchise, whereas the consensus of opinion seemed to favor first agreeing on the terms of a franchise, then after test at a general election, to seek the necessary enabling legislation. Mr. Kirkland stated that Mr. Blair was willing to cooperate but in his opinion the procedure he favored was one that would produce the best results.

A motion was unanimously passed as an expression of opinion by the conference, that a committee consisting of one member from each of the interests involved meet with the corporation counsel and chairman, D. S. McKinlay, and outline a plan for consideration.

While Chicago Surface Lines officials are not in full accord as to the proper course to be followed in negotiating a

ceeding with the consideration of an ordinance at once and meeting the legal technicalities as they arose. The elevated lines are not asking a franchise or permission to consolidate with the Surface Lines, but Mr. Budd declared they are willing to go along with public sentiment.

While they were divided on other points, the traction officials and bankers appeared to be of one mind, however, in their attitude toward local regulation of the consolidated transit properties. The sentiment of the majority of them was voiced by Albert W. Harris, chairman of the Harris Trust & Savings Bank, who said that he was in favor of home rule for Chicago, but he was not for home rule if by that was meant the City Council is to run the street railways. He could not raise any money under such a program.

Mr. Budd suggested that inasmuch as the subject is not essential to the settlement the question of regulation be put aside for the time being.

As a result of the co-operative attitude displayed city officials now believe that Chicago will be able to go to the state Legislature next spring and set forth just what enactments will be needed to settle its traction affairs.

No Change at Newark, Ohio

The latest available news from Newark, Ohio, indicates that the transportation situation in that city is unchanged. A citizens' committee is endeavoring to have operation restored on the lines of the Southern Ohio Public Service Company and is urging the City Council to take the initiative. The company has commenced track reconstruction on lines in the heart of the city to take care of the interurban traffic. No final agreement has been reached as regards the return of the street cars. The reasons for the withdrawal of service were reviewed in the ELECTRIC RAILWAY JOURNAL of Aug. 14.

New Franchise in Peoria

An ordinance has been adopted granting a twenty-year franchise for railway operation in Peoria, Ill. The Illinois Power & Light Corporation, pending signature of the ordinance by Mayor Louis Mueller, will continue to operate the cars. The company has agreed to pave between rails when necessary, to spend \$150,000 on improvements and to transport city employees free. Efforts made to postpone action until next year were defeated. Plea was made, also, for a tax of 4 per cent of the gross receipts by the city, but opponents pointed out that in cities where such tax was exacted no agreement was made covering paving between rails or other improvements. Several other minor objections were raised by the opponents to the franchise.

Grand Rapids Regrets Mr. Madigan's Retirement

Great regret has been expressed by the Grand Rapids Railway, Grand Rapids, Mich., at the retirement of John C. Madigan, long general superintendent. Mr. De Lamarter, vice-president and general manager of the company, in a few words in the employees' monthly publication says Mr. Madigan will be missed both as an executive and as a friend. He says:

"As a street railway executive, Mr. Madigan has few equals. As a man he is one of the most lovable characters I've ever met."

Both Division 836, Amalgamated Association, and the company's Employees Benefit Association entertained Mr. Madigan at farewell gatherings. At these meetings Mr. Madigan expressed himself well satisfied with the co-operation and loyalty shown him by the organization during his years of service. Mr. Madigan's retirement was recorded in the ELECTRIC RAILWAY JOURNAL of July 3.

Matters Still Unsettled in Pontiac

The City Commission of Pontiac, Mich., has failed to take any definite action on a new proposal of the Detroit United Railway, looking towards a solution of the city's transportation problems. The company proposed a plan for construction on South Saginaw Street, the main artery, whereby it would put in double tracks, providing the city absorbed the rest of the cost of the improvement. Investigation of a plan for operation of buses and street cars, in combination, the company stated, involved \$750,000, a sum too large for it to handle at this time.

Car Stop Referendum in Cincinnati

In order to settle a difference of opinion among the car riders, regarding traffic stops at Peebles Corner, one of the busiest terminal points in Cincinnati, Ohio, the Cincinnati Street Railway conducted a referendum on the rear platforms of its cars, the ballots being distributed by the conductors. The car riders were asked to express a preference between the present boarding sta-

tion and the original ones. By a majority of about 2,000 votes the present traffic stops in which the Peebles Corner terminal is used were approved. The traffic stops now in force were made by the railway at the request of the city administration in order to facilitate traffic at that point. Walter A. Draper, president of the railway, has transmitted the results of the election to Col. C. O. Sherrill, City Manager, for consideration.

Armored Money Car for Seattle Municipal Railway

The public utilities committee of the City Council at Seattle, Wash., has approved a request of C. R. Jackson, superintendent of public utilities, for the purchase of a 1-ton armored truck at a cost of \$1,500 for use in transporting receipts of the Municipal Railway from the carhouses to banks and from banks to carhouses. The car will carry an armed guard. It will displace the present system of using a small, worn-out truck fitted with an iron chest. He estimated the cost of employing a regular armored bank truck for this purpose at \$5,010 yearly. The cost to the city for using its old car is \$4,355. Mr. Jackson declared this can be reduced with a new car. The car will also transport tokens and transfers.

Another Store Stages a Sale by Street Car

When the Culbertson's Store at Spokane, Wash., chartered all street cars bound for the downtown district for one hour on the morning of a large annual sale, the Spokane United Railways carried 3,637 passengers for the merchandise concern. Signs reading "Culbertson's Free Car" were carried on the dashboard of each car and anyone who boarded a car was carried free regardless of destination. There was an average of 28 passengers on each car, and the management of the store was well pleased with the results obtained. The usual 7-cent ticket fare was paid by the store to the railway.

Electrification of Virginian Nearing Completion

The work of electrifying the Virginian Railway between Roanoke, Va., and Princeton, W. Va., a project which was embarked upon about the first of the year, will be completed by Sept. 15, and electrically-operated locomotives may be expected to run into the Roanoke yards by that date. Already the huge job of electrifying the Roanoke yards is estimated to be about 80 per cent complete. These yards will be a more important part of the Virginian system after the electrification than they are at present, due to the fact that coal shipments from the West will be brought to Roanoke for classification and weighing before being carried farther eastward by steam locomotives.

Completion of the project will give the Virginian a continuous electrified right-of-way from Elmore, near Mulhens, W. Va., to Roanoke, a distance of 134 miles. Operation of electric trains

began over the 36-mile stretch between Elmore and Princeton on Sept. 21, 1925.

The entire electrification project, including the portion of the road between Princeton and Elmore, will cost the Virginian about \$15,000,000.

Rapid Transit for Seattle Reagitated

The City Planning Commission of Seattle, Wash., through its special committee on rapid transit, has completed a report of rapid transit and grade separation and submitted the report to the City Council for its consideration. The committee, headed by William Pitt Trimble, recommends the linking of the present system of surface tracks with subway and elevated lines at a cost estimated at \$4,000,000. The committee believes its recommendations, if followed out, would relieve downtown traffic congestion. The Eighth Avenue South subway, it is estimated, would cost \$1,000,000 and the ordinance which authorizes the condemnation of sites required for broadening Eighth Avenue and to provide entrances to the subway has been prepared for passage. On the Westlake Avenue North program, the municipal railway system has purchased the necessary new rails and requires \$62,000 to relay the tracks and better the roadbed, in order to speed up the street cars and cut down the running time between Times Square and the south end of the Fremont Bridge by several minutes.

The subject of rapid transit for Seattle was reviewed in an article in the ELECTRIC RAILWAY JOURNAL for May 29, page 938, and was made the text of an editorial at that time.

Results Reported Under New Tacoma Grant

An improvement in the earnings of the Tacoma Railway & Power Company, Tacoma, Wash., under the new fare basis was reported recently to the City Council in a conference between company officials and City Commissioners, but the increase is said not to have been up to expectations, following the city's agreement to eliminate jitneys. The week of July 26-Aug. 1, which came the nearest to representing conditions contemplated by the transportation agreement, was the best so far computed. Decreased riding over the similar period of last year remains an outstanding feature of the railway reports, but this is accounted for in part by the fact that passes were in full use last year. For the week computed, the decreased riding amounted to 10.1 per cent, while revenues decreased to \$22,422 from \$23,126 for the similar week of last year, or 3 per cent.

Operating of the Tacoma municipal belt lines under the new fare and interchange of transfers with the Tacoma Railway & Power Company during July resulted in an increase in passengers on the municipal line and an increased net passenger revenue. The belt line netted \$3,877 on passenger business during July as against \$3,627 for the similar month of 1925, a gain of \$349 for the municipal line.

No Need Seen for Buses at Fort Smith

R. C. Coffy, vice-president and general manager of the Fort Smith Light & Traction Company, Fort Smith, Ark., declared recently that surveys by the company's engineers and other experts had shown that there was no need for the addition of buses to supplement the car service, since the company already operates cars to practically every portion of the city. He said that when six Birney safety cars were purchased recently it marked a definite policy of the company against buses.

Car and Bus Lines United in Portsmouth

The long, drawn-out struggle for a unified bus and railway transportation system in Portsmouth, Va., has been brought to a conclusion by the passage of an ordinance to that effect by the City Council. The stock and equipment of the Consolidated Bus Corporation has been sold to the Virginia Electric & Power Company. The price involved was more than \$100,000. The Virginia Electric & Power Company will operate buses to Park View, Prentiss Place and the Navy Yard and a double-track railway system to Port Norfolk and Pinners Point.

Wages of Covington Employees Being Arbitrated

Wage increase demands of employees of the Cincinnati, Newport & Covington Street Railway, Covington, Ky., are being arbitrated by company officials and delegates of the men. The employees have set 60 cents an hour as the new wage figure for motormen and conductors. This is an increase of 7 cents an hour over the present scale. The contract between the company and the employees, members of the Amalgamated Association, expired on Aug. 4.

They Certainly Made a Fuss Over Her

A farewell dinner was held on Aug. 18 at the Old Kirk Inn, Beaver, Pa., for Miss Elma C. Graham, chief clerk, who has resigned her position with the Beaver Valley Traction Company to accept the position of educational secretary with the Beaver County Health Association.

The affair was attended by about 40 members of the organization. It was in charge of J. R. Marshall, chairman of the committee. Talks were made by Clinton D. Smith, general manager; J. R. Marshall, superintendent of transportation, and others of the foremen and invited guests. A pen and pencil set, engraved with her initials, was presented Miss Graham as a token of the regard in which she was held by her associates.

Regret was expressed at Miss Graham's departure; she received many congratulations on her ability, and the best wishes of all for her continued success. A dance was held following the dinner. The printed program of the affair, decorated with funny little illustrations, was a knockout.



News Notes

42-Mile Run for One Man Car.—Competition has become keen for the honor of operating the longest one-man car route in Ohio. Significant as was the statement made in the JOURNAL of Aug. 21 that the Stark Electric Railroad was operating a run between Canton and Salem, a distance of about 32 miles, it has since been brought to light that the Cincinnati, Georgetown & Portsmouth Railroad, Cincinnati, Ohio, has been operating a 42-mile line with one-man cars since April 1, 1923.

Relief from Paving Costs Asked.—In accordance with the recent advertising campaign of the Harrisburg Railways, Harrisburg, Pa., against bearing the cost of paving between the street car rails, the company has appealed to a committee of the school board to join it in asking the city to relieve it of the cost of paving in extending the tracks of the company to the New John Harris High School.

Booklet of Instructions from Milwaukee Electric.—With a view to increasing mutual understanding between street car patrons and the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., an illustrated leaflet has been issued by this company which clearly describes just how to use all cars in city service. Illustrations on the inside of the leaflet suggest the observance of instructions which will promote convenience to all passengers in their use of the four different types of cars in use in the city.

School Children to Pay Regular Fare.—Practice of granting reduced fares to school children will be discontinued by the Sioux City Service Company, Sioux City, Ia. The new ruling will require high school pupils of the age of twelve years or more to pay regular adult fares. The 3-cent fare will be charged younger pupils. Fares have been 5 cents and 2½ cents, respectively, for children attending school if they used pass books purchased through the Board of Education. The Board will have to pay the higher rate for those pupils entitled to free transportation.

New Grand Rapids Cars Arouse Wide Interest.—The leadership of Grand Rapids, Mich., in the improved type of electric cars recently put into service by the Grand Rapids Railway is receiving attention in many cities. The papers of that city have reproduced an article from the New York Times commending the company on its progressive policy. In addition one of the local papers, the Grand Rapids Press, has commented editorially on the Times article. The Press characterized the account in the Times as "the occasion of another tribute to the courage and progressiveness of our local utility; and, incidentally, not bad advertising for the Furniture City."

Time-table of Express Bus Service.—A time-table folder showing a map of the new express bus service has been issued by the Northern Ohio Power &

Light Company, Akron, Ohio. The buses run, for the most part, on a twenty-minute schedule. A brief word is said on the folder of the comfort, speed and safety of the new line of service. Special buses may be chartered by private parties for in or out of the city trips.

Trolley Company Wins Stay in Yonkers.—The intended sale of fifteen motor bus franchises by the City of Yonkers, N. Y., has been stayed until Sept. 10 by Supreme Court Justice Taylor, who has taken under advisement an application by the Third Avenue Railway System and its subsidiaries in Yonkers to prevent the sale. Justice Taylor ordered the postponement to give him more time to decide the motion. The railway contends that the buses will compete with its lines and that if the franchises are to be sold they should go to a single purchaser. It is reported that the Third Avenue System intends to buy the franchises and operate buses on those which do not compete.

Tokens and Holder on Sale in Baltimore.—The United Railways & Electric Company, Baltimore, Md., has placed on sale at nearly 100 stores and other locations a holder for the street car fare tokens. It is pointed out that this holder "solves the mystery of the missing token." The holder contains thirteen tokens. It sells for \$1. The token fare in Baltimore is 7½ cents.

Two-Cent Transfer Fee Approved.—The Alabama Public Service Commission has approved application by the Birmingham Electric Company, Birmingham, Ala., of a 2-cent transfer charge for transfer from its Mountain Terrace line to other lines and from other lines to the Mountain line. The company had announced the beginning of through service from the end of the Mountain Terrace line into what is known as the loop district of the city of Birmingham. The 2-cent transfer charge, it was stated, is applied on other similar lines.

Railroad Would Operate Over Interurban.—The Southern Pacific Railroad, San Francisco, Cal., has applied to the Interstate Commerce Commission for authority to operate under trackage rights over the line of the Fresno Interurban Company in common with the Atchison, Topeka & Santa Fe Railway, under lease, as authorized by the commission. The rights would be secured under a rental basis and cover trackage from a point of connection with the Santa Fe near Fresno, a distance of 17.6 miles, for the purpose of affording transportation facilities to agricultural interests. The terms of the rental are not stated.

Denver Tramway Loathe to Resume Service.—The Denver Tramway, Denver, Col., remains firm not to resume car service on Eighteenth Street between the Union depot and Broadway. The territory is being served by buses of the Yellowway company. The business men of the street passed a resolution asking the railway to replace its cars or the city to give the Yellowway company a franchise to operate buses. Something must be done along about Sept. 1 because the bus company is giving a 30-day free service.

Recent Bus Developments

Unusual Sightseeing Tour in Southern California

The Pacific Electric Railway, Los Angeles, Cal., and the Gray Line Motor Tours are operating what bids fair to become one of the most popular sightseeing trips in southern California. It is known as the Movie Studio-Mount Lowe Trip. Its particular appeal to the sightseer lies in the fact that its route traverses Hollywood, passes the palatial homes of famed movie artists, enters the Lasky ranch, home of Paramount Pictures, and climaxes with a trip to Mount Lowe. A trained guide accompanies and explains the various interesting features.

Starting at 8:30 a.m. daily from the Clark Hotel, on Hill Street between Fourth and Fifth, the tour leaves in large upholstered observation coaches through the business section of Los Angeles to Hollywood, passing en route Echo Park, Angelus Temple and the residence of Aimee Semple McPherson. From Hollywood the coaches pass at close hand the palatial residences of prominent motion picture stars, thence over Cahuenga Pass through the San Fernando Valley.

A stop is made at the mammoth picture-making plant and the sightseer may view the working ground and sets of such stars as Theodore Roberts, Pola Negri, Richard Dix, Jack Holt, Lois Wilson and others of equal rank, under contract with Famous Players-Lasky Corporation. The Lasky Ranch, 1,600 acres in extent, is entirely devoted to the production of Paramount Pictures.

After the studio visit the tour passes the new plant of the First National Pictures Corporation. Thence the journey leads to the picturesque foothills of North Glendale, thence into the heart of Glendale.

Leaving Glendale, the route continues through one of the most graphic sections of southern California, over a range of mountains on a newly completed boulevard, entering the aristocratic Flintridge Estates. An inspiring scenic panorama of the lofty Sierra Madre Mountains, later to be visited by rail, is to be viewed upon leaving the Flintridge district.

Then comes Pasadena, entrance to which is made through the Arroyo Seco and over Devil's Gate Dam.

A tour is made through the residential section of Pasadena to Montana and Fair Oaks, where begins the journey to Mount Lowe.

South Shore Line Asks New Bus Route

Petition for a motor coach route between Gary and Hammond, Ind., 10 miles distant from each other, was filed by the Shore Line Motor Coach Company with the Indiana Public Service Commission on Aug. 12. It is proposed to operate from the company's terminal on North Broadway, Gary, over Fifth Avenue and Hemstock

Road to its Hammond bus terminal on State Street. The route would be considerably shorter than the interurban line of the Gary Railways, an associated company, and would also serve additional territory, the petition points out.

Salt Lake-Ogden Line Approved

Utah Public Service Commission Approves Appeal of Interurban to Parallel Its Railway Lines

Bus service is to be established between Salt Lake City and Ogden, Utah, completing the link of bus line connections from Salt Lake City north to the Idaho state line.

The Public Utilities Commission of Utah has issued to the Bamberger Electric Railroad, which operates between Salt Lake City and Ogden, a certificate of convenience and necessity to operate a bus line, independent of its passenger service.

Action has been deferred, however, on the application of the Utah Light & Traction Company for permission to withdraw its service on its railway line to Centerville (a point which is also on the Bamberger line) about 15 miles north of Salt Lake City, in the event the bus line certificate is granted. This application will be treated by the commission as an independent case.

Service on the railroad buses has been ordered restricted to points between Salt Lake City and Ogden north of Centerville. Transportation facilities between Salt Lake City and Centerville were held to be adequate as already established.

Express service on the new line is also to be restricted to prevent it from interfering with the freight business already handled by the Salt Lake-Ogden Transportation Company, which operates a freight truck line between these cities. Only such express as may be handled by the regular passenger coaches without impairment of the passenger service may be hauled by the railroad buses under the commission's order.

In this case the commission overrides the protests by the Davis County School Board, the County Farm Bureau of Davis County, the Davis County Taxpayers' Association, incorporated towns within Davis County, the American Railway Express Company, and the conditional protests of the Utah Light & Traction Company and the Salt Lake-Ogden Transportation Company. The service was favored by the Chambers of Commerce of Logan, Utah and Ogden, Utah.

More than 70 per cent of the passenger service between Salt Lake City and Ogden originates at points outside of Davis County. The maintenance of the road is paid from proceeds of the gasoline tax. The truck service between Salt Lake City and Ogden by the Salt Lake-Ogden Transportation Com-

pany is adequate. The transportation facilities between Salt Lake City and Centerville are adequate. These are the findings made by the commission in overruling and protests and in restricting the express and passenger service.

The commission ruled that there was some public demand for bus service between the two points, but holds to its policy recently established, of granting existing transportation agencies authority to enter the bus field in the hope that private automobile owners may be induced in some measure to patronize the buses, thus enabling the rail lines to regain some of their lost passenger business.

The commission expects the Bamberger Railroad to operate a modern passenger bus system in such a manner as will fully meet the requirements and serve the convenience of the public, not as an auxiliary to its present rail service, but as an independent unit. Jurisdiction is reserved to the commission to enter such supplemental orders as it deems necessary to this end.

Rights of Central New York Operator Restricted

The Public Service Commission on July 30 granted to Herbert M. Parke, now operating bus lines out of Rome, N. Y., a certificate covering the extension of his present routes, but imposed a number of restrictions. He is, for instance, prohibited from carrying local passengers between the terminal in Utica and Deerfield Corners, from point to point in the city of Rome and through passengers between the terminal in Utica and the terminal in Rome.

An application by the Utica Clayville Motor Bus, Inc., now operating bus lines from Utica southerly, for a certificate to operate a line between Utica and Sylvan Beach by way of the State road in Floyd and Marcy and Rome was denied.

Inasmuch as the Parke and the Utica Clayville company's applications covered the same operating territory, both were considered together by the commission. Evidence submitted showed that Parke has been operating bus lines for eight years and that he had never had an accident.

The New York State Railways and the New York Central Railroad opposed the granting of a certificate covering a line between Rome and Utica. The evidence on the hearings was to the effect that the present through service between the two cities was ample, but that there is little if any service to persons wishing to travel between intermediate points in Marcy and Floyd or to Rome or to Utica. Floyd and Marcy town officials and representatives of the Utica State Hospital, Marcy division, urged that a certificate be granted for a bus line along the Utica-Rome river road. The commission held that there was sufficient demand for service to justify the issuance of a certificate. The commission says:

The question is then raised as to which of the operators should receive the certificate. What the Utica-Clayville corporation in reality desires is the right to operate excursion buses from Utica to Sylvan Beach, with the short-haul business as a minor incident. There was little testimony showing the public need of such excursion

business. Parke now not only has the right to carry passengers through this territory but is also authorized to do local business through the territory. He therefore is in a position to offer the traveling public the service that the corporation offers and in addition give local service.

The evidence showed that the New York State Railways operated south of the barge canal and the New York Central between Utica and Rome and that the only competition with these carriers would be on through passengers, which Parke under the certificate must not handle.

Buffalo-Toronto Bus Service

Through de luxe bus service between Buffalo and Toronto, Ont., has been started by the International Bus Corporation, Buffalo, N. Y., a subsidiary of the International Railway, and the Toronto Transportation Commission.

trip fare for transportation alone is \$6.75. Buses leave Buffalo at 7:30 and 11:30 a.m. and 7:45 p.m. The route from Buffalo to Toronto is 119 miles.

Railway Abandons Non-Paying Bus Line.—Another electric railway in Indiana has received permission to abandon its bus service. The Indiana Public Service Commission has authorized the abandonment of the bus line operated between Fort Wayne and the Indiana-Ohio state line by the Fort Wayne, Van Wert & Lima Traction Company. The commission said that the loss sustained by the line from Jan. 1 to June 30 of this year was nearly \$10,000. Every community through which the bus line passes is served by electric railway.

Bus Substitution Upheld.—The Eugene Street Railway, Eugene, Ore., has been upheld in its application to substitute buses for street cars on the Eugene-Springfield run. The route now used by the railway is to be taken over by the Southern Pacific Railroad as a part of its new line upon completion of the Cascades cut-off to Klamath Falls.

Buses to Fill the Gap.—The Bus Transportation Company, a subsidiary of the Denver Tramway, Denver, Col., has asked the State Public Utilities Commission for permission to operate buses between Denver and Arvada, Col., about 8 miles. The tramway lines do not pay. The commission has the matter under advisement. If the right to operate buses is granted, it is likely that during the dull season the tramcars will be taken off and buses will take care of traffic.

Traction Company Leaves Ohio Bus Line.—Lease of the Springfield, Mechanicsburg & Delaware Bus Company was obtained on Aug. 4 by the Dayton & Columbus Transportation Company, the bus subsidiary of the Indiana, Columbus & Eastern Traction Company, Springfield, Ohio.

Bus Companies Refused Permits in Milwaukee.—Requests of the American Coach Company and Edwin Kroeling, Menomonee Falls, for permission to operate bus service in the downtown section of Milwaukee, Wis., in competition with the street car and bus lines of the Milwaukee Electric Railway & Light Company, Milwaukee, Wis., were

turned down by the Railroad Commission at a special hearing, at which city officials were also present to oppose the granting of permits. The City Council has adopted the policy of refusing permits to operate buses pending completion of the city-wide transportation survey now under way.

Steam Railroads Oppose Rochester Bus Line.—Claiming that their companies would, perhaps, lose as much as 80 per cent of their business, representatives of two steam railroads, the Dansville & Mount Morris and the Buffalo, Rochester & Pittsburgh, opposed the application of the Rochester Interurban Bus Company, a subsidiary of the New York State Railways, Rochester, N. Y., to operate buses connecting Livonia, Hornell and Long Point. Receivers for the Dansville & Mount Morris claimed that the Erie Railroad, with a line that also parallels the proposed bus route, had withdrawn opposition because of an agreement with the promoters of the bus route.

Recommends Combining Seattle Lines.—Combining of the 24th Avenue Southwest and Admiral Way bus lines of the Seattle Municipal Street Railway, Seattle, Wash., has been recommended by D. W. Henderson, superintendent, who declares that better service can be given by this combine. He also opposed the proposed extension of the Beacon Hill car line, on the ground that this line showed a loss of \$10,000 in 1925 over the previous year.

Decides to Retain Baltimore Bus Line.—The United Railways & Electric Company, Baltimore, Md., has notified the Maryland Public Service Commission that it will continue to operate its bus line between Baltimore and Chesaco Park, a development in the eastern suburbs of the city. The company recently announced that it would not continue the service but later decided to keep the line in operation.

Bus Permit Refusal May Cause Higher Fares.—Permission for the trial operation of city bus service during the months of July, August and September having been flatly refused by the Marinette City Council, the Menominee & Marinette Light & Traction Company, Menominee, Mich., announces that application will be made to the Railroad Commission for an increase in fares and adjustment of service inasmuch as the operation of the railway in that city is being carried on at a loss. An attempt was to be made to determine if the transportation system in Marinette could be placed on a satisfactory basis through the operation of combined railway and bus service.

New Garage for Altoona Buses.—The Altoona & Logan Valley Electric Railway, Altoona, Pa., and the Logan Valley Bus Company, a subsidiary, have taken possession of the new concrete and steel garage adjoining the carhouse. This building houses the fleet of eighteen buses, two tower cars and four service trucks made necessary by the recent buses purchased. Eight new machines were secured during the past few months. The Logan Valley will purchase four more buses for use on the West Tyrone and Nealmont routes in Tyrone. The company plans to abandon 12 miles of track.

TORONTO--NIAGARA FALLS--BUFFALO
Daily Motor Coach Service
 Leave Front and Yonge daily—9 a.m., 2 p.m., 8 p.m.
(Daylight-Saving Time)
 Leave T.T.C. Office, Queen and Roncesvalles daily—
 9.15 a.m., 2.15 p.m., 8.15 p.m.
Toronto—Niagara Falls, Round Trip \$4.50
Toronto, Niagara Falls, Buffalo, Round Trip . . . \$6.75
 Leave Niagara Falls daily—9 a.m., 2 p.m., 9 p.m.
(Daylight-Saving Time)
TICKETS GOOD FOR 10 DAYS

\$14.25 TWO-DAY TOUR \$14.25
 ALL EXPENSES INCLUDED
TORONTO-NIAGARA FALLS-BUFFALO
 Leave Front and Yonge, daily—9.00 a.m. (D.S. Time)
 Leave T.T.C. Office, Queen and Roncesvalles—9.15 a.m.
 Return next day, arriving at Toronto 6.00 p.m.
 Two-Day Tour includes motor coach tour, luncheons at The Refectory, Niagara Falls, meals and room at Hotel Touraine, Buffalo, and Sight-seeing Tour of Buffalo.

TORONTO TRANSPORTATION COMMISSION
 Operating "THE GRAY LINE" Motor Coach Tours
 35 YONGE ST. Adelaide 8001

Appeal to the Public for Patronage

The route is by way of Niagara Falls. Three round trips are made daily. The International Bus Corporation takes passengers from Buffalo to Niagara Falls, Ont., where tourists are transferred to de luxe buses of the Toronto Transportation Commission. An all-expense tour includes luncheon at Niagara Falls, Ont., and overnight accommodations at the Walker House in Toronto. The round trip fare for the tour, including meals and sleeping accommodations, is \$14.25, while the round



One of the Toronto-Buffalo Buses Ready to Start

Financial and Corporate

\$71,718 Increase in Net in Detroit

Interesting Comparisons Contained in Report of Auditor Hauser to the City Officials

The balance of net income of the Department of Street Railways at Detroit, Mich., for the year ended June 30, 1926, was \$613,378 after the payment of sinking fund charges. The balance of net income for the year ended June 30, 1925, was \$541,660. The past year shows an increase in the balance of net income over the year ended June 30, 1925, of \$71,718 or 13.2 per cent.

PASSENGER MOVEMENT IS ON INCREASE

During the past year ended June 30, 1926, 498,881,346 passengers were carried by the rail lines and 17,885,596 by the coach lines, a total of 516,766,941 passengers compared with a total of 458,208,396 passengers carried during the year ended June 30, 1925, divided 454,036,811 rail lines and 4,171,586 coach lines. In other words, the Department of Street Railways carried 58,558,545, or 12.8 per cent more passengers, in the year ended June 30, 1926, than in the year ended June 30, 1925.

Density of passengers, i.e., total passengers per car-mile, is an index of service. In the year ended June 30, 1926, the rail lines operated 55,823,983 car-miles and carried 498,881,346 passengers or at the rate of 8.94 passengers per car-mile, compared with 48,300,107 car-miles operated in the

year ended June 30, 1925, and 454,036,811 passengers carried or at the rate of 9.40 passengers per car-mile, so that a less crowded condition existed in the cars during the year ended June 30, 1926, than in the year ended June 30, 1925, by about 5 per cent.

Speed of service as reflected by the car-miles per car-hour is also another

RESOURCES AND FUNDS AVAILABLE AT DETROIT

Resources and Funds Provided Construction bonds voted April 5, 1920	\$15,000,000
Purchase bonds voted April 17, 1922	4,000,000
Detroit United Railway obligation voted April 17, 1922	17,080,000
Additions and betterments bonds voted April 2, 1923	5,000,000
Deposits for land sales	430,841
Balance of earnings for the period from February 1, 1921, to June 30, 1926, after the payment of (a) operating expenses (b) taxes (c) interest, etc. (d) sinking funds	4,584,589
Total resources and funds provided	\$46,094,430
Disbursements	
For road and equipment	\$44,666,419
For cash—working funds	114,600
For material and supplies	1,017,361
Total disbursements	\$45,798,381
Resources and funds provided in excess of disbursements for capital costs, or amount at June 30, 1926, available for future capital costs	\$296,048

index of service. This factor of service for the year ended June 30, 1926, shows an average car speed for the rail lines of 9.4 miles an hour compared with 9.2 miles an hour for the year ended June 30, 1925. The car move-

ment has been speeded up about 0.2 mile an hour.

In the year ended June 30, 1926, the coach lines operated 5,775,695 coach-miles and carried 17,885,596 passengers, or at the rate of 3.10 passengers per coach-mile compared with 1,218,308 coach-miles operated in the year ended June 30, 1925, and 4,171,585 passengers carried, or at the rate of 3.42 passengers per coach-mile.

The coach movement shows an average coach speed for the year ended June 30, 1926, of 9.7 miles an hour.

STATEMENT OF ASSETS

Resources and funds provided in excess of disbursements for capital costs, or amount at June 30, 1926, available for future capital costs, were \$296,048 as disclosed by the accompanying statement. Stated differently, the current and working assets are in excess of the current and working liabilities by \$296,048.

The accrued interest, operating reserves, and sinking fund reserves are all funded with cash and securities 100 per cent, and at June 30, 1926, consist of the following:

Sinking funds for debt	\$5,827,880
Special deposits for interest	296,584
Injuries and damages fund	860,966
Repairs and renewals fund	179,283
Total	\$7,164,714

Of this amount \$1,500,000 is loaned on behalf of the Department of Street Railways to the City of Detroit on its demand notes drawing interest at 4 per cent.

These facts are all taken from the report made by William M. Hauser, auditor of the municipal railway system under the direction of H. U. Wallace, the general manager, under recent date to the city and the railway officials.

INCOME AND STATISTICAL STATEMENT OF DETROIT MUNICIPAL RAILWAY

	—Year Ended June 30— 1926	1925
Income		
Operating Revenue		
Railway operating revenue	\$23,200,361	\$21,262,763
Coach operating revenue	1,340,720	297,754
Total operating revenue	\$24,541,081	\$21,560,518
Non-operating income	235,034	213,137
Total revenue from all sources	\$24,776,115	\$21,773,656
Operating Expenses		
Railway operating expenses	\$17,527,553	\$15,261,599
Coach operating expenses	1,328,937	300,155
Total operating expenses	\$18,856,491	\$15,561,754
Net revenue from all sources	\$5,919,624	\$6,211,901
Deduct		
Taxes assignable to operation	\$695,128	\$716,414
Other deductions	450	485
Interest on funded debt:		
On purchase bonds	152,577	158,230
On construction bonds	785,875	785,875
On additions and betterments bonds	217,682	112,551
On purchase contract (D. U. R.)	824,909	884,495
Total interest	\$1,981,045	\$1,941,152
Total deductions	\$2,676,624	\$2,658,051
Net income	\$3,243,000	\$3,553,849
Disposition of Net Income		
Sinking Funds:		
For purchase bonds	\$133,000	\$133,000
For construction bonds	545,742	571,351
For additions and betterments bonds	163,360	520,319
For purchase contract (D. U. R.)	1,787,518	1,787,518
Total sinking funds	\$2,629,621	\$3,012,189
Balance for the period	\$613,378	\$541,660

COMPARISON OF OPERATING STATISTICS OF DETROIT MUNICIPAL RAILWAY

	—Year Ended June 30— 1926	1925
Railway revenue car-miles	55,823,983	48,300,107
Coach revenue coach-miles	5,775,695	1,218,308
Railway revenue car-hours	5,927,506	5,252,021
Coach revenue coach-hours	595,848	.....
Railway revenue passengers	370,456,658	338,155,230
Railway transfer passengers	128,424,688	115,881,581
Railway total passengers	498,881,346	454,036,811
Coach revenue passengers	16,740,647	4,171,585
Coach transfer passengers	1,144,948	.....
Coach total passengers	17,885,595	4,171,585
Total revenue and transfer passengers	516,766,941	458,208,396
Railway operating revenue per car-mile	41.56 cents	44.00 cents
Coach operating revenue per coach-mile	23.21 cents	24.44 cents
Railway operating expenses per car-mile	31.39 cents	31.59 cents
Coach operating expenses per coach-mile	23.01 cents	24.64 cents
Railway operating revenue per car-hour	\$3.91	\$4.05
Coach operating revenue per coach-hour	\$2.25	.....
Railway operating expenses per car-hour	\$2.96	\$2.91
Coach operating expenses per coach-hour	\$2.23	.....
Ratio of transfer passengers to revenue passengers—railway	34.67%	34.27%
Ratio of transfer passengers to revenue passengers—coach	6.84%	.....
Railway revenue passengers per car-mile operated	6.64	7.00
Railway transfer passengers per car-mile operated	2.30	2.40
Total railway passengers per car-mile operated	8.94	9.40
Coach revenue passengers per coach-mile operated	2.90	3.42
Coach transfer passengers per coach-mile operated	.20	.....
Total coach passengers per coach-mile operated	3.10	3.42
Ratio of railway operating expenses to railway operating revenue	75.55%	71.78%
Ratio of coach operating expenses to coach operating revenue	99.12%	100.81%

Income of Brooklyn-Manhattan 48 per Cent Over July, 1925

The regular monthly statement of the Brooklyn-Manhattan Transit Corporation for July, 1926, shows an increase in total operating revenue of \$347,595 while the total operating expense increased only \$60,945 over July, 1925. The net income has increased \$241,033, or 48 per cent over the same month last year. The statement follows:

	July, 1926	July, 1925
Total operating revenues	\$4,171,774	\$3,824,179
Total operating expenses	2,572,649	2,511,701
Net revenue from operation	\$1,599,125	\$1,312,477
Taxes on operating properties	282,532	262,206
Operating income	\$1,316,592	\$1,050,271
Net non-operating income	70,703	99,431
Gross income	\$1,387,295	\$1,149,702
Total income deductions	649,714	653,154
Net income	\$737,581	\$496,548

Successor to Cumberland & Westernport Railway Chartered

A charter has been granted the Cumberland & Westernport Transit Company, Cumberland, Md., to take over and carry on the business previously conducted by the Cumberland & Westernport Electric Railway.

The authorized capital stock is 3,930 shares of preferred of no par value and

9,755 shares of common of no par value. The preferred provides for dividends of \$5 per share per annum. The directors named in this charter are David D. Price, James T. Chambers and Thomas W. Price, Frostburg, Md. and Walter C. Capper, Paul L. Hitchins and F. Brooke Whiting.

The application for a charter will be followed later by the reorganization of the railway, which is still in the hands of the receiver. As soon as the recent sale under foreclosure is ratified by the court and the receivership terminated the new company will take hold.

Subsidiaries in Washington to Merge

The City & Suburban Railway, Washington, D. C., and the Georgetown & Tenleytown Railway, controlled by the Washington Railway & Electric Company, may be merged into the parent company in the near future. The stockholders of the W. R. & E. have been called to meet on Oct. 10 to consider the question. Officials explain that this proposal bears no particular significance to the broad problem of bringing about a consolidation of the Washington Railway & Electric and the Capital Traction systems.

The merger of these two subsidiary lines with the Washington Railway & Electric system, it was said, could be carried out under the old merger act of 1900. The only relation the elimination of these two separate companies bears to the question of a general merger is that it represents a preliminary step that would be necessary in a general consolidation.

\$700,000 Indiana Service Issue Offered

A new issue of \$700,000 of 6 per cent preferred stock of the Indiana Service Corporation was offered to investors on Aug. 13 by the Utility Securities Company, Chicago. The Indiana Service Corporation, a subsidiary of the Midland Utilities Company, furnishes electric light and power and city and interurban railway service to 30 communities in and around Fort Wayne, Ind.

The present stock issue will be sold at \$92.50 a share to yield about 6.50 per cent. The last preferred stock of the company was a 7 per cent issue and was sold on the basis of a fraction above the 7 per cent yield. The new 6 per cent stock is on a parity in every respect with the 7 per cent issue, except as to the annual dividend rate and the callable price. Seven per cent stock with a par value of \$2,050,000 is now outstanding.

A controlling interest in the Indiana Service Corporation was acquired by the Midland Utilities Company more than a year ago.

Deficits Pile Up on Toronto Radials

According to the Toronto, Ont., Star Con. Gibbons on Aug. 4 deplored the delays on the part of the city in taking over the York Radial Railways.

"We ought to take them over and deal with them afterwards," he said, referring to the settlement of finances and other details involved in the transfer.

A report submitted to the board of control for the eight months ended June 30 showed a deficit on the three lines of \$197,063. The deficits on the individual lines were: Metropolitan, \$102,425; Scarboro, \$30,188; Mimico, \$64,449.

The matter was laid over for a full board.

Con. Gibbons expressed regret that the transfer of these lines should be delayed again and again while these deficits were allowed to pile up.

\$106,441 Surplus Reported by International Railway

The net income of the International Railway, Buffalo, N. Y., for the six months ended June 30, 1926, was \$106,441 compared with a deficit of \$244,015 for the similar period of 1925. The complete statement as made public by the company follows:

Six Months Ended June 30	1926	1925
Operating revenue	\$5,353,187	\$5,169,779
Operation and taxes	4,532,241	4,649,752*
Operating income	\$820,946	\$520,027
Non-operating income	20,233	17,229
Gross income	\$841,179	\$537,256
Income deductions	734,738	781,271
Net income	\$106,441	\$244,015

*Adjusted to include 3c. per hour additional wage paid December 31, 1925, retroactive to January 1, 1925.

Conspectus of Indexes for August, 1926

Compiled for Publication in This Paper by
ALBERT S. RICHEY
Electric Railway Engineer, Worcester, Mass.

	Latest	Month Ago	Year Ago	Since War	
				High	Low
Street Railway Fares* 1913 = 4.84	Aug. 1926 7.36	July 1926 7.36	Aug. 1925 7.28	June 1926 7.37	May 1923 6.88
Electric Railway Materials* 1913 = 100	Aug. 1926 153.1	July 1926 154.1	Aug. 1925 151.6	Sept. 1920 247.5	Oct. 1924 148.5
Electric Railway Wages* 1913 = 100	Aug. 1926 225.9	July 1926 225.7	Aug. 1925 222.6	Sept. 1920 232.0	March 1923 206.8
Am. Elec. Ry. Aasn. Construction Cost (Elec. Ry.) 1913 = 100	Aug. 1926 203.6	July 1926 203.2	Aug. 1925 201.0	July 1920 256.4	May 1922 167.4
Eng. News-Record Construction Cost (General) 1913 = 100	Aug. 1926 208.3	July 1926 207.8	Aug. 1925 204.6	June 1920 273.8	Mar. 1922 162.0
U. S. Bur. Lab. Stat. Wholesale Commodities 1913 = 100	July 1926 150.7	June 1926 152.3	July 1925 159.9	May 1920 246.7	Jan. 1922 138.3
Bradstreet Wholesale Commodities 1913 = 9.21	Aug. 1 1926 12.64	July 1 1926 12.74	Aug. 1 1925 14.24	Feb. 1 1920 20.87	June 1 1921 10.62
U. S. Bur. Lab. Stat. Retail Food 1913 = 100	July 1926 157.0	June 1926 159.7	July 1925 159.9	July 1920 219.2	Mar. 1922 138.7
Nat. Ind. Conf. Bd. Cost of Living 1914 = 100	July 1926 166.0	June 1926 167.0	July 1925 168.7	July 1920 204.5	Aug. 1922 154.5
Steel Unfilled Orders (Million Tons) 1913 = 5.91	July 31 1926 3.603	June 30 1926 3.479	July 30 1925 3.54	July 31 1920 11.118	July 31 1924 3.187
Bank Clearings Outside N. Y. City (Billions)	July 1926 19.18	June 1926 18.93	July 1925 18.71	Oct. 1920 20.47	Feb. 1922 10.65
Business Failures Number	July 1926 1661	June 1926 1574	July 1925 1451	Jan. 1924 2231	Aug. 1925 1353
Liabilities (Millions)	July 1926 89.86	June 1926 49.34	July 1925 31.80	Jan. 1924 122.95	Aug. 1925 27.22

*The three index numbers marked with an asterisk are computed by Mr. Richey, as follows: Fares index is average street railway fare in all United States cities with a population of 50,000 or over except New York City, and weighted according to population. Street Railway Materials index is relative average price of materials (including fuel) used in street railway operation and maintenance, weighted according to average use of such materials. Wages index is relative average maximum hourly wage of motormen, conductors and operators on 137 of the largest street and interurban railways operated in the United States, weighted according to the number of such men employed on these roads. Previously the wage index applied to 144 railways. The change is due to dropping some roads where the number of trainmen has been reduced to a total of less than 100.

Railway-Bus Merger Terms for New York Approved

The New York Transit Commission issued an order on Aug. 25 permitting the Fifth Avenue Coach Company to purchase all of the common stock, 90,200 shares, of the New York Railways Corporation at \$10 a share. Permission to buy the stock was granted after a two-day hearing. No objection was raised to the purchase.

Elmer Schlesinger of the law firm of Stanchfield, Chadbourne & Levy told Commissioner Godley that the purpose of the sale was to co-ordinate surface transportation in Manhattan. This, he said, was a necessary step in the handling of the present problem.

Commissioner Godley asked Frederick T. Wood, president of the Fifth Avenue Coach Company, whether it would take an issue of bonds to pay for the stock. Mr. Wood replied that the company has a cash surplus sufficient for the purchase of the stock and that it proposed to pay for the stock out of that surplus.

The Fifth Avenue Coach Company and the New York Railways made a joint application for a bus franchise through the New York City Omnibus Corporation last May. In return for the desired franchise the railway, which controls about 75 miles of tracks, proposed to eliminate 25 miles of tracks on which 200 cars are now operated and replace them with buses. It proposes to operate buses crosstown for a 5-cent fare and north and south for a 10-cent fare. It agreed to issue transfers.

The New York Railways lines include the Sixth and Seventh and Lenox Avenue lines, as well as the surface lines on lower Broadway and Lexington Avenue, and the Eighth, Fourteenth, 23d, 34th and 116th Street crosstown lines.

Under a plan of reorganization made public by the company in February, 1924, the total capitalization of the new company was said to be \$41,503,000, a decrease of \$49,863,445 from that of the old company. On this capitalization the annual fixed charges showed a decrease of \$1,129,050, and the annual charges, including interest on income bonds, a decrease of \$1,399,533. The fixed charge securities showed a decrease of \$23,908,898.

Of the old company securities in the hands of the public, totaling \$91,366,445, there remained undisturbed or privileged to conversion bonds in the amount of \$14,653,000. The total which remained undisturbed under the new plan, and which did not carry the conversion privilege, was stated to be \$12,803,000.

No action has yet been taken by the city on the application made in behalf of the companies for bus operating rights. The filing of this appeal, which incidentally was widely misunderstood as to its purport, was made the subject of editorial comment in the ELECTRIC RAILWAY JOURNAL at the time.

Twelve-Mile Abandonment Sought.—The Hudson Valley Railway, Glens Falls, N. Y., has applied to the Public Service Commission for approval of a declaration of abandonment of that

part of its line between Lake George and Warrensburg, a distance of 6 miles, and the Thomson and Greenwich line, a distance of 6.27 miles, alleging that those parts of its electric system are no longer necessary for the successful operation of railway or the convenience of the public.

24 per Cent Increase Over 1925 Period for Baltimore Lines

The half-yearly statement of operations of the United Railways & Electric Company, Baltimore, Md.; shows that net income for the period, after all deductions, covered dividend requirement, for the six months with \$50,606 to spare. Total increase for the six months compared with the corresponding period in 1925 was \$90,080. Gross revenues showed an increase of \$84,203.

The company's best month in net income of this year so far was May, although the biggest percentage of increase in net income came in January. June, while it showed a small increase in gross revenue and an even smaller increase in net, disclosed a decrease in revenue passengers of 40,245.

STATEMENT OF EARNINGS AT BALTIMORE FOR PERIOD FROM JAN. 1 TO JUNE 30

	1926	Increase		
Passenger revenue.....	\$8,316,898	\$70,774		
Other revenue.....	110,937	13,428		
Total.....	\$8,427,835	\$84,203		
Operating expenses:				
Way and structures.....	\$461,256	248,059		
Equipment.....	471,203	216,620		
Power.....	744,051	57,627		
Conducting transportation..	2,598,711	242,917		
Traffic.....	31,944	3,220		
General and miscellaneous..	759,142	15,735		
Trans. for Inv.—Cr.....	x5,385	3,618		
	\$5,060,924	\$27,394		
Depreciation.....	421,391	4,210		
Total.....	\$5,482,316	\$23,184		
Net operating revenue.....	\$2,945,519	\$107,387		
Taxes.....	845,354	2187		
Operating income.....	\$2,100,164	\$107,574		
Non-operating income.....	47,736	1,298		
Gross income.....	\$2,147,901	\$108,873		
Fixed charges.....	1,688,070	18,793		
Net income.....	\$459,830	\$90,080		
x Credit. z Decrease.				
Net income by months was as follows:				
	1926	1925	Increase	Per Cent
January.....	\$70,135	\$35,530	\$34,604	97
February.....	27,606	31,032	*	11
March.....	102,917	85,839	17,077	19
April.....	81,049	65,964	15,084	22
May.....	104,860	78,225	26,635	34
June.....	73,261	73,157	103	..
	\$459,830	\$369,750	\$90,080	24

* Decrease.

Service Orders Made at Madison

The Wisconsin State Railroad Commission has ordered the Madison Street Railways, Madison, Wis., to discontinue its railway service on Harrison Street and temporarily discontinue its service on Regent Street until the Regent Street line may be connected with the Breeze Terrace line.

The commission has further ordered the railway to start a bus service from Monroe Street to the Forest Hill Cemetery to replace the railway service. The buses, according to the commission's order, must be scheduled to meet every regular car on the Monroe Street line.

The principal reason for the proposed discontinuance of the Harrison Street line is the undesirable crossing with Keyes Avenue made necessary by the fact that the railway tracks cross the Illinois Central Railroad on a bridge which is much higher than the grade of Keyes Avenue, the latter being adjacent to the right-of-way of the railway.

Mayor A. G. Schmedeman has appointed a committee to confer with the railway with the idea of reaching a settlement whereby this service will not be discontinued. This committee will investigate the matter and report to the Common Council at its next meeting.

Receiver Appointed for Utah Interurban

Upon petition of the Westinghouse Electric & Manufacturing Company, the Utah-Idaho Central Railway, operating between Ogden, Utah and Preston, Idaho, has been placed in the hands of P. H. Mulcahy, general manager, as receiver. Action of the Westinghouse company was based upon a past due indebtedness of \$4,259. The complaint also alleged that the railroad was insolvent and unable to meet its obligations.

According to Joseph Scowcroft, president of the railway, the road's financial difficulties are due largely to the encroachment of the motor truck upon the road's freight business and to heavy losses in passenger business due to the private automobile.

The Utah-Idaho Central line was originally designed as a passenger carrier. With the remarkable popularity of the automobile, however, this business fell off, and efforts were directed towards getting freight traffic. This also decreased with the increased use of the truck, and the earnings of the company were not enough to meet its obligations.

The road was constructed in 1914 and 1915 between Ogden and Preston, a distance of 95 miles. The company also has 3 miles of trackage in Logan, Utah, and 20 miles in branches at Plain City and Quinney, Utah. The estimated value of the property is \$6,000,000. Bonds are said to be held mostly by Ogden people.

Line to Be Dismantled in New Jersey.—The Burlington County Transit Company, Hainesport, N. J., has been ordered by the Northampton Township Committee to remove its rails and roadbed on Main and Washington Streets, Mount Holly, N. J.

\$800,904 in Claims Against Indiana Road.—Claims totaling \$800,904 against the Union Traction Company of Indiana have been filed in the circuit court at Anderson, Ind., by Arthur W. Brady, receiver of the company. The list includes claims accrued against the Union Traction prior to the present receivership. In accordance with an order of the court issued on Feb. 5, the receiver gave notice to all creditors and the claims filed have been examined and audited. Some have been allowed and others disapproved subject to confirmation by the court.

Personal Items

New Officers for Market Street Railway

Announcement is made that at recent meeting of the stockholders of the Market Street Railway, San Francisco, Cal., the following new directors were elected: William M. Abbott, M. McCants, Halford Erickson, A. W. Foster, Samuel Kahn, Hunter Liggett, Jesse W. Lilienthal, Jr., J. J. O'Brien, Moritz Rosenthal, M. B. Starring, George W. Willcutt.

Messrs. Erickson and McCants were elected to fill vacancies made by the resignation of H. T. Scott and the death of Leander S. Sherman.

The resignation of Mason B. Starring as president of the Market Street Railway was tendered and accepted at the meeting of the company's new board of directors. His resignation was offered in deference to the company's new management, the Byllesby Engineering & Management Corporation, and to leave him free to attend to his own large business interests.

The directors elected officers for the current year, but did not elect a successor to Mr. Starring at the present time. Announcement was also made that Samuel Kahn, executive vice-president, will perform the duties of president in the interim.

These officers were elected: Samuel Kahn, executive vice-president; Halford Erickson, vice-president; William M. Abbott, vice-president and general counsel; George B. Willcutt, vice-president and secretary; A. M. Dahler, treasurer; E. M. Massey and M. A. Morrison, assistant secretaries.

Charles S. Stephens Advanced at Honolulu

Charles S. Stephens has been promoted to superintendent of transportation of the Honolulu Rapid Transit Company, Ltd., Honolulu, Hawaii, succeeding Alexander Pratt. Mr. Stephens started with the company as conductor in 1901. He was appointed timer in 1902 and was promoted to assistant superintendent in 1903. He has served in the last-named capacity ever since.

Officers of New Connecticut Bus Company Announced

Announcement has been made of the personnel of the Hartford & Springfield Coach Company, Warehouse Point, Conn., the successor to the Hartford & Springfield Street Railway. Arthur L. Linn, Jr., is the president of the company. The vice-president of the company is A. C. Marshall, a man of wide experience in the bus field and a former bus operator in Florida who still retains some of his interests there although most of them were sold by him to Stone & Webster, public utility operators. The secretary of the company is A. L. Shipman, well-known attorney of Hartford. The general man-

ager is Joseph T. Hambleton, former manager of the railway, under whose guidance and influence the bus policy of the railway was developed. Control of the coach company passed recently to Mr. Linn and his associates.

L. E. Fischer Made Vice-President North American Light & Power Company

L. E. Fischer has been appointed vice-president in charge of operation of the North American Light & Power Company, Chicago.

The new operating executive of this large public utility group was the first general manager of the Illinois Traction System, which railway with its supplemental group of public utility properties was under his management from 1903 until 1909. The experience which fitted him for executive official of the Illinois Traction System at the age of 27 years included preliminary training



L. E. Fischer

in the St. Louis Manual Training School, a B.S. and C.E. degree at the University of Illinois, a term as assistant city engineer at Kewanee, Ill., also as city engineer at Paris, Ill., and later as superintendent and manager of the Danville electric, gas and railway properties of the Illinois Traction System at Danville, Ill.

After his resignation as vice-president and general manager of the Illinois Traction System in 1909, Mr. Fischer established a consulting engineering organization in St. Louis where he has had an important part in the planning, construction and operation of many public utility, civic and industrial engineering projects.

The North American Light & Power Company has recently been reorganized, but its properties will continue as heretofore to be operated as a separate entity, under Clement Studebaker, Jr. president. It serves 700 communities in Illinois, Iowa, Missouri, Kansas and Nebraska with electric light and power, gas and other utility services, and owns the Illinois Traction System, a 500-mile trunk line electric railway in the state of Illinois, with terminus at St. Louis.

Alexander Pratt Retires at Honolulu

Alexander Pratt, for more than 25 years superintendent of transportation of the Honolulu Rapid Transit Company, Ltd., Honolulu, Hawaii has retired from active service. He is one of the real old timers, having been in the electric railway business more than 35 years.

Mr. Pratt was born in Aberdeenshire, Scotland, in 1860, but came to the United States as a young man. After a varied career he started with the old Metropolitan Railway, San Francisco, in 1891 as motorman and gripman. He was promoted to inspector and dispatcher, and on May 18, 1901, he resigned to become superintendent of transportation of the Honolulu Rapid Transit Company, then with its road under construction. His service in Honolulu has been continuous since then until his retirement on Sept. 1, 1926—25 years after the first car was run.

John Luther Advanced with Wisconsin Properties

John Luther, who has been connected with electric railways in Wisconsin since 1901, when he started work with the old Manitowoc & Northern Traction Company, has been appointed superintendent of the railway and motor bus lines of the Wisconsin Public Service Corporation. His headquarters will be at Manitowoc.

For some time past Mr. Luther has held the post of master mechanic with the Wisconsin Public Service Corporation. From trackman he was promoted to motorman and later succeeded James Phair as superintendent of the Manitowoc & Northern Traction Company. When the Wisconsin Public Service Corporation took over the lines he was made master mechanic.

Mr. Luther succeeds Edward Holub, who has been transferred to another division of the corporation. In turn Mr. Luther has been succeeded as master mechanic by Oscar Fricke, who has been with the company since 1920.

J. Frank O'Meara has been appointed assistant secretary to the Public Service Commission of New York to succeed Harold W. Palmer, resigned. Mr. O'Meara has served in the office of the State Comptroller and the fiscal supervisor of state charities and last year was a part of the Senate desk force in which work he had the title of assistant deputy clerk.

G. Gordon Gale, vice-president and general manager of the Hull Electric Company, Hull, Que., has also been appointed general manager of the Gatieneau Power Company, another Canadian International Paper Company subsidiary.

Capt. Victor Topping, who as a Strachcona Memorial Fellow at Yale, has just completed with S. James Dempsey a survey of current methods of study and research in transportation for Yale University, is planning to enter consulting practice in Toronto, Canada. He will be associated in partnership with Henry K. Wicksteed, a noted railway

engineer. The firm will specialize in transportation of various kinds, both on the engineering and economic sides, such as city planning, valuation, rate questions, etc. Captain Topping was at one time engineer of traffic analysis for the Toronto Transportation Commission, which operates electric railways in Toronto.

Obituary

R. A. Willson

Russell A. Willson, assistant general manager of the Spokane United Railways, Spokane, Wash., died on Aug. 19 after being confined to his home since April with Brights Disease. He has been an executive of the Washington Water Power Company and the reorganized United Railways since 1907 and was one of the oldest men in point of service in the electrical industry.

Mr. Willson went to Spokane in November, 1905, as assistant to D. L. Huntington, then general manager of the Washington Water Power Company. As the commercial department expanded and the railway department grew to require special attention, Mr. Willson became general superintendent of the railway department. This was in 1908. He held this position until 1922, when the Spokane Traction and the W. W. P. railways were consolidated. At that time he was made assistant general manager of the Spokane United Railways.

Mr. Willson was born in 1866 in Ishpeming, Mich. He began his life work at Florence, Wis., as an operator of a stationary steam engine, for a mining company. A season with the Chicago & Northwestern Railroad in surveying work was followed by several years in Milwaukee in various lines of business.

In the early '80's he returned to Ishpeming and took charge of the first electric light and power plant, operated by a mining company there. After two and a half years in Ishpeming he went to Marquette where he had full charge of the city's light and power plant and system for nine years. He constructed this plant.

The Westinghouse Company then sent him west, to Helena, Mont., where he was put in charge of the gas, electric and street railway properties which position he held until 1906, building a new light and power plant while there.

Always interested in things mechanical and the development of new devices and methods in the properties of the electrical and electric railway industry, Mr. Willson advanced a multitude of practical ideas to the local companies at Spokane and patented a number of devices now in general use in the railway and electrical fields.

Augustus Lowry Verner, sales manager of the New York office of the Lorain Steel Company, is dead. He had been in charge of the New York office for the last six or eight years, and in the employ of the company for 25 years. Mr. Verner came to New York from Cleveland. He was 47 years of age.

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

Four Bids Received for 150 Cars for Philadelphia

Bids were opened on the morning of Aug. 27 at the office of Henry E. Ehlers, the Director of City Transit, for furnishing and delivering 150 steel passenger cars for the Broad Street subway, Philadelphia. There were four bidders: J. G. Brill Company, \$4,039,434; Bethlehem Shipbuilding Company, \$4,092,840; American Car & Foundry, \$4,099,750, and Magor Car Corporation, \$4,150,350. Specifications call for delivery to begin not later than May 1, 1927, these to continue at the rate of not less than 25 a month, so that all deliveries will be completed not later than Oct. 31, 1927. Other details were supplied in an article in the *ELECTRIC RAILWAY JOURNAL* for July 24, page 167.

Detroit Will Combat Jitneys with 50 More Coaches

Fifty additional Graham Brothers 21-passenger motor coaches, bringing the total number in use by the system up to 198, have recently been ordered by the Department of Street Railways of Detroit, Mich. The new units will be run on Woodward and East Jefferson Avenues, in a high-speed express service, to combat the privately owned 7-passenger touring cars, which are at present doing a large jitney business, in spite of the best efforts of the City of Detroit to drive them off the streets.

The bus service will be co-ordinated with that of the street car lines already on these avenues. According to the contract, eighteen coaches are to be delivered within twelve days of receipt of order, and the remainder at the rate of fifteen a week.

Westinghouse Company Will Experiment with Bus

New experimental bus of the Westinghouse Air Brake Company, with special body equipped with delicate re-

coding apparatus, for testing the effect of various brake combinations on heating, service life, etc., under heavy duty on steep grades has been acquired for experimental work.

Rolled Manganese Parts Specified in Philadelphia

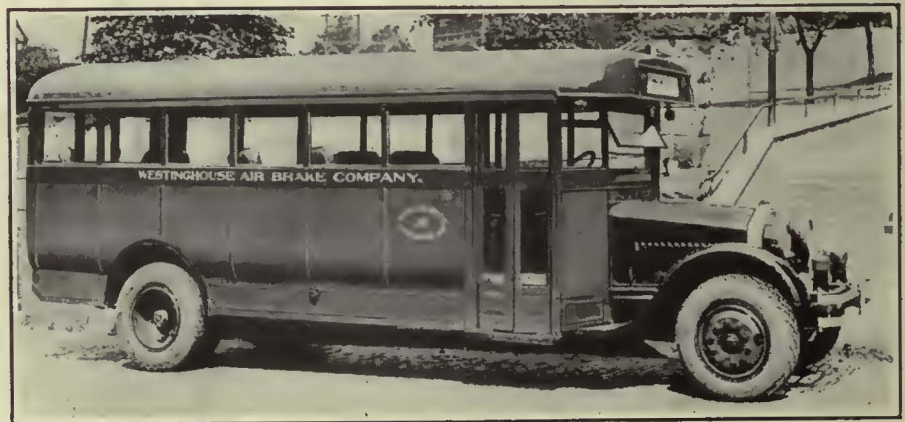
As a recognition of the greatly increased longevity which marks the use of chafing or wear plates formed of rolled or forged manganese steel, the city of Philadelphia has included this item in its list of specifications on 150 new cars for the Broad Street subway, bids for which were opened on Aug. 27, as reported in another item on this page. The use of rolled and forged manganese steel parts in electric railway practice is of comparatively recent origin, but very successful results have been obtained upon the properties which have given them a trial. It is possible with this type of steel to materially reduce the dimensions of the wearing parts, since the hardness of the metal and its peculiar resisting power make surface wear almost unheard of.

The chafing wear plates specified for the subway cars in Philadelphia will embody the following parts: Bolster chafing plates, transom chafing plates, motor-nose chafing plates for motor and transom, journal box gibs, pedestal gibs, brake lever chafing plates, brake lever guide wear plates, edge of slots in frame for brake lever guides, edge of horizontal radial brake lever and truck and body side bearing chafing plates.

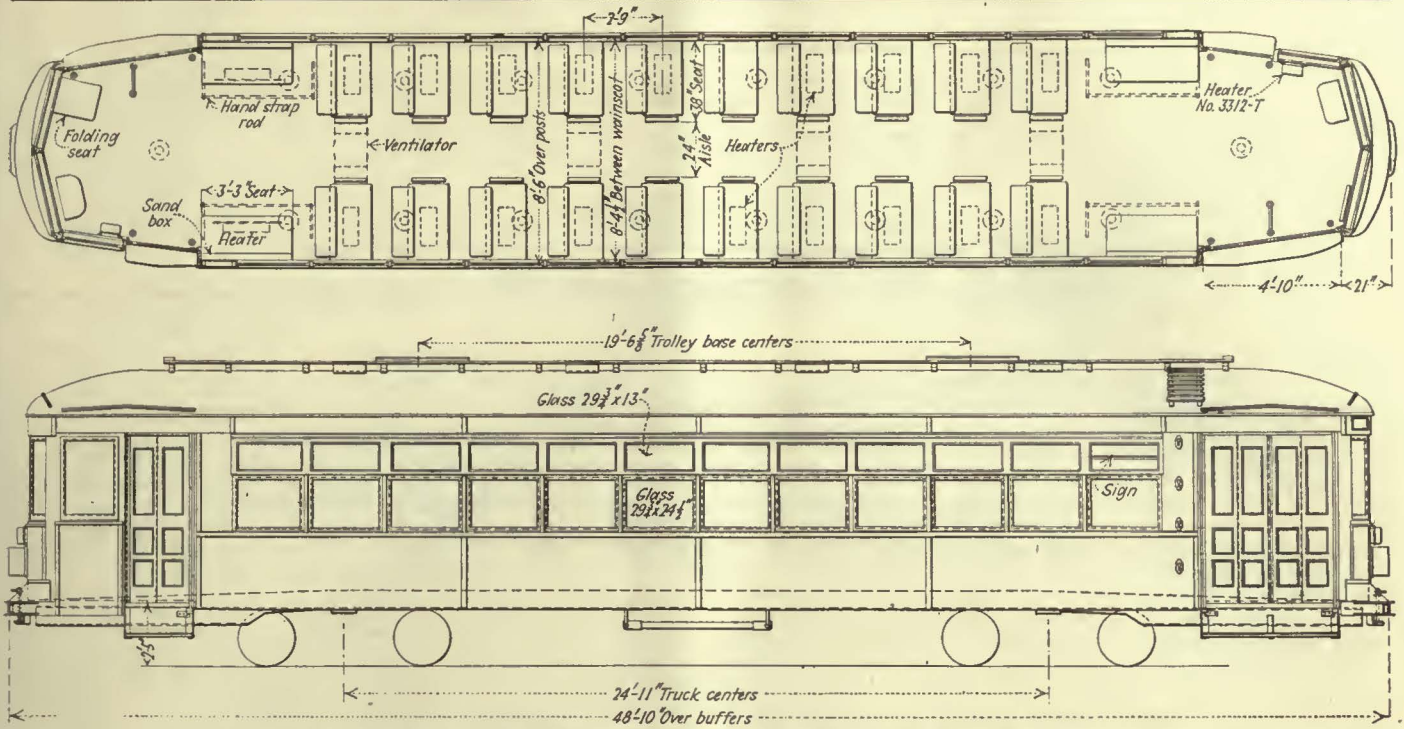
Prices of Mazda Lamps Reduced

A further reduction in the prices of Mazda lamps, effective on Sept. 1, 1926, is announced by the General Electric Company. It amounts to about 7 per cent on the sizes generally used of the new standard line of lamps and approximately 5 per cent on all types.

This is the eighth reduction of Mazda lamp prices since 1920. It means a



Special Experimental Bus Designed for Westinghouse Company



New Cars for Berkshire Street Railway Follow Recommendations of Special Car Committee

saving to the public of approximately \$4,000,000 a year.

The prices of Mazda lamps are now 44 per cent below the 1914 prices as compared with a 65 per cent increase in the average cost of commodities since that year.

The reductions in Mazda lamps prices have been made possible primarily by better manufacturing methods and by standardization and simplification of lamp types.

Berkshire Cars Will Follow A.E.R.A. Specifications for Interurban Units

Some of the first cars to be built according to the standard design adopted by the American Electric Railway Association special committee on the essential features of modern cars are twelve interurban units for the Berkshire Street Railway of Pittsfield, Mass. The cars are being constructed by the Osgood-Bradley Car Company, Worcester, Mass. They will be used in interurban service in the territory served by the Berkshire Company. Seats for 50 passengers are provided in the design. Specifications follow:

- Weight 37,000 lb.
- Bolster centers, length 24 ft. 11 in.
- Length over all 48 ft. 10 in.
- Truck Wheelbase 5 ft. 6 in.
- Width over all 8 ft. 8 in.
- Height, rail to trolley base 11 ft. 3 in.
- Body Semi-steel
- Interior trim Mahogany
- Headlining Nevasplit
- Roof Arch
- Air Brakes General Electric
- Armature bearings Plain
- Axles Carnegie Steel Co.
- Bumpers Osgood-Bradley
- Car signal system Consolidated Car Heating Co.
- Car trimmings J. L. Howard & Co.
- Center and side bearings Osgood Bradley Car Co.
- Compressors General Electric CP-27B
- Conduits and junction boxes Osgood-Bradley
- Control General Electric K-35-KK
- Couplers Osgood Bradley
- Curtain fixtures Curtain Supply Co.

- Curtain material Pantasote
- Destination signs Electric Service Supplies Co.
- Door operating mechanism National Pneumatic Co.
- Fenders or wheelguards Osgood-Bradley
- Finish Sherwin-Williams enamel
- Gears and pinions General Electric
- Hand brakes National Brake Co.
- Heater equipment Consolidated Car Heating Co.
- Headlights General Electric
- Journal bearings Osgood-Bradley, plain
- Journal boxes Symington
- Lightning arresters General Electric
- Motors Four G.E. 265-A, inside hung
- Registers Ohmer
- Safety Devices Safety Car Devices Co.
- Sanders Osgood-Bradley
- Sash fixtures Curtain Supply Co.
- Seats Heywood-Wakefield Co.
- Seating material Real Spanish leather
- Springs Osgood-Bradley
- Step treads Mason
- Trolley retrievers Earl
- Trolley base US-20-A
- Trolley wheels General Electric
- Trucks OBC-45-66
- Ventilators Gariand
- Wheels Wrought Steel A.E.R.E.A.-A-3

New Type Bus Body Designed for Virginia Company

A new type of 21-passenger pay-enter bus body has been designed recently by the Hoover Body Company, York, Pa., for the Virginia Electric & Power Company, Norfolk, Va. The body is mounted on a White 53 bus chassis.

Five units have been ordered for operation in the city of Norfolk.

The most unique of the special features of the new body is the full-length exit door located just back of the wheelhouse on the right side, as is shown in the accompanying illustration. This door facilitates handling passengers during peak-load periods and is mechanically operated from the driver's seat. The frame-work of the body is of oak, while aluminum completely covers all exterior surfaces. A heavy aluminum guard rail encircles the body.

Genuine leather seats are used on the interior, which is made especially attractive by the fact that the metal sections are grained, and that the roof is finished in white ivory.

Business Code Is Widely Adopted

Eight hundred and thirteen chambers of commerce and trade associations have adopted the fundamental code of business ethics formulated by the Chamber of Commerce of the United States. The principles of business conduct were formulated as a general guide for all lines of trade, and were not intended to govern specific customs of any one particular business. The purpose of the code is to establish



Full-Length Rear Exit Door Speeds Up Service During Rush Hours

the principle of self-government in business, and to educate American business men to a sense of the binding force of such principles. Several schools of business administration intend to make this code a part of their curriculum.

Smaller Profits Being Made in Manufacturing

Although the volume of business done by manufacturing corporations is increasing, the profits are decreasing, according to figures given out by the National Industrial Conference Board, New York City. After reducing all data to terms of dollars of 1913 purchasing power so as to take into account the price decline, it appears that whereas the gross income of manufacturing corporations increased 43 per cent during 1919-1923, the net income increased only 9.9 per cent, indicating the declining rate of profit at which these corporations were operating.

Also, whereas the total number of all manufacturing corporations increased 25.5 per cent in those years, those reporting a net income increased only 3.6 per cent, and those reporting no net income nearly doubled in number. However, since the total gross income of those corporations reporting no net income increased approximately only \$1,000,000,000, it would appear that business loss in general has been sustained by those concerns operating on a smaller scale.

While the latest available statistics for the above analysis are for the year 1923, much the same conditions prevailed in 1925 and the first half of 1926 as to the movement of prices, the board declares, making the significance of the 1923 figures applicable to present-day conditions.

Reo Creates Another Sedan Bus

A new sedan type has been added to the line of bus models manufactured by the Reo Motor Car Company, Lansing, Mich. An unusual feature of this model is that it provides a choice by the purchaser of either of two different seating arrangements.

The standard arrangement provides for a 17-passenger bus. There are four cross-seats in wicker, trimmed in Colonial gray leather, with a passenger chair next to the driver's seat. The other seating arrangement converts the bus into a parlor car type of 15-passenger capacity. There is a row of double chairs on one side of the aisle, and a row of single chairs on the other side. The price of the bus is \$5,100, irrespective of the seating arrangement desired.

Patent and Trademark Chart Issued

A chart of patents and trademarks has recently been issued by the National Industrial Conference Board, which shows the number of patents issued in the United States each year since 1850, and the number of trademarks registered annually since 1870, compares their relative growth since the beginning of the present century,

Metal, Coal and Material Prices

Metals—New York		Aug. 24, 1926
Copper, electrolytic, cents per lb.		14.325
Copper wire, cents per lb.		16.25
Lead, cents per lb.		8.90
Zinc, cents per lb.		7.75
Tin, Straits, cents per lb.		65.125
Bituminous Coal f.o.b. Mines		
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons		\$5.425
Somerset mine run, Boston, net tons		1.975
Pittsburgh mine run, Pittsburgh, net tons		1.75
Franklin, Ill., screenings, Chicago, net tons		1.625
Central, Ill., screenings, Chicago, net tons		1.50
Kansas screenings, Kansas City, net tons		2.35
Materials		
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.		\$6.25
Weatherproof wire base, N. Y., cents per lb		18.00
Cement, Chicago net prices, without bags		2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb.		12.1
White lead in oil (100-lb. keg), N. Y., cents per lb.		15.25
Turpentine (bb ¹ lots), N. Y., per gal.		\$0.95

and indicates the status in number of accumulated patents in the United States and the rest of the world. This chart, known as No. 139, illustrates two of the outstanding aspects of the economic development in the past century; the growth of invention incidental to industrial progress, and the increase of trademarking following in the path of organized distribution.

Rolling Stock

Shore Line Motor Coach Company, Gary, Ind., has accepted delivery of ten Fageol six-cylinder parlor car coaches, equipped with Westinghouse air brakes.

Montreal Harbor Commission, Montreal, Que., recently received two of five electric locomotives ordered from England. Each of these engines weighs 100 tons, has four drivers of 250 hp. each and under normal conditions will draw a 3,500-ton train continuously, accelerating to a speed of 16 m.p.h. Each locomotive is capable of taking care of 100 per cent overload for half an hour, and of 200 per cent overload for twenty minutes.

Sacandaga Valley Transportation Company, a subsidiary of the Fonda, Johnstown & Gloversville Railroad, Gloversville, N. Y., has purchased a 25-passenger, semi de-luxe bus for operation between the railway terminal at Northville, N. Y., and Lake Pleasant, a 44-mile feeder route through a summer resort section. In winter this bus will be used in city service. The bus was purchased from the International Motor Company, New York, N. Y.

Wheeling Public Service Company, Wheeling, W. Va., is expecting delivery within three weeks of fifteen new street cars ordered some time ago from the St. Louis Car Company, St. Louis, Mo. The cars are to be modern in every respect and will embody many features insuring a special degree of comfort to the passengers. They will replace older type cars which have been operated heretofore in Wheeling.

Chicago & Joliet Electric Railway, Joliet, Ill., is preparing a fleet of ten new interurban cars for service, beginning Sept. 7, between Joliet and Chicago in the Willow Springs district. The first four cars will run between Joliet and Chicago and the others will be extras between Willow Springs and

Chicago. The cars, each of which has a smoking compartment, were manufactured in the Paris, Ill., shops. They weigh only 39,000 lb. as against the 30-ton cars now in service, with the same speed and greater acceleration power. A double end construction type has given four of the cars a capacity of 48, while the others have a 52-passenger capacity.

Trade Notes

Harold M. Graham has been appointed chief engineer of the Ross Heater & Manufacturing Company, Inc., Buffalo, N. Y. In addition to his experience in power plant engineering, Mr. Graham has done considerable research work on the subject of heat transmission and vacuum, which has rendered him an expert in that field.

Elwell-Parker Electric Company, Cleveland, Ohio, manufacturer of electric tractors and trucks, has added to its line a new 5-ton lift tractor, with 27½x60x11-in. platform. This tractor, which is type EP-10, is of very solid construction throughout and is designed for heavy duty in handling loads larger than those usually sustained by electric trucks.

H. F. Darby, Jr., of 1700 Walnut St., Philadelphia, Pa., has been appointed direct factory representative in the Philadelphia district of the Kuhlman Electric Company, Bay City, Mich. Mr. Darby was formerly sales manager of the Cutter Electrical & Manufacturing Company.

J. N. Joyce has joined the Cleveland office of the Bridgeport Brass Company, located at 2017 Superior Viaduct, for the purpose of soliciting sales on Bridgeport-Keating flush valves and Plumrite brass pipe. Mr. Joyce was formerly associated with the Johns-Manville Company.

New Advertising Literature

Westinghouse Electric & Manufacturing Company, East Pittsburgh, Pa., has issued illustrated catalog No. 284 on Rectigon battery chargers. The pamphlet describes the application, operation and construction of radio and private garage Rectigon outfits, home outfits, radio "B" battery charging attachments, telephone Rectigon outfits, 6-amp. 75-volt Rectigon outfits and the 12-amp. 75-volt Rectigon outfits.

Pyle-National Company, Chicago, Ill., has issued the third edition of its general catalog (No. 101) of railway electric equipment. The pamphlet contains information on lighting of railroad yards and locomotives. Oliver wiring appliances for locomotive car and shop wiring are described.

Hauck Manufacturing Company, Brooklyn, N. Y., has issued a booklet describing the new Hauck Venturi suction torch. The distinctive feature of the new torch is that no pressure is maintained on the oil supply tank, thereby eliminating danger of injury to life resulting from a bursting tank.



Provide positive protection for passengers and property

It is not only a duty but also plain common sense for an electric railway to make every possible provision for safety.

To protect its passengers means increased public confidence and eliminates the losses due to damage suits.

To protect its property reduces the cost of maintenance of rolling stock and general repair bills.

To accomplish this result install—

Peacock Staffless Brakes

The chain winding capacity of 144 inches enables them to develop maximum braking power under all conditions. Being light in weight and requiring minimum platform space, these brakes are especially adapted for modern, single and double-truck, light-weight safety cars.

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 For Locomotives, Passenger, Freight and Electric Cars
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 ELECTRICAL WIRES and CABLES
 John A. Roebling's Sons Company, Trenton, N. J.

ACME Window Curtain Fixtures
 Noiseless — direct acting — enlarged friction surface — less parts — stronger — more easily and finely adjusted.
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A Single Segment or a Complete Commutator
 is turned out with equal care in our shops. The orders we fill differ only in magnitude; small orders command our utmost care and skill just as do large orders. CAMERON quality applies to every coil or segment that we can make, as well as to every commutator we build. That's why so many electric railway men rely absolutely on our name.
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Pullmans are constructed to years of service and safety. Busses must also give years of service and utmost safety. We are doing our part by manufacturing **FRONT AXLES ONLY**. Building in quality that will endure.

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Boyerized Boy pins Old Man Wear-and-Tear's shoulders to the mat!

Without any preliminary feinting the Boyerized Boy and Old Man Wear-and-Tear came to grips in as fierce a catch-as-catch-can match as any of the present generation ever saw.

The wonderful condition of the Boyerized Boy soon began to tell. For he easily stood the terrific pace while Old Wear-and-Tear quickly tired.

Although the result was never in doubt after the first few minutes the quick and decisive victory of the Boyerized Boy was a revelation to old timers who many times had seen ordinary steel parts meet with quick defeat at the hands of Old Man Wear-and-Tear.

This ability to withstand all opposition is the main factor in the popularity of Boyerized Parts throughout the electric railway industry.

Make your selections from the list shown. Then get quotations.

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THE International Harvester Company, after twenty-two years of truck manufacture and experience, holds position as one of the two or three leaders in total annual production of high-grade motor trucks. Its thousands upon thousands of trucks, everywhere in the United States, are maintaining a superlative reputation.

Besides trucks, International Harvester builds motor coaches—for all passenger hauling requirements. The 6-cylinder models, for 24 to 33 passengers, are 4-wheel-air-brake equipped and fitted with every de luxe appointment. The 4-cylinder "SL" coach, for 12 to 14 passengers, brings special flexibility and economy to coach route operation.

McCormick-Deering Industrial Tractors complete the International automotive line. These compact power units are ideal for many trailer hauling jobs and for work around yards, plants, etc. Equipped with spring-mounted front axle and geared for 2, 4, and 10 m.p.h. Wheel and tire equipment for all classes of industrial, commercial and municipal work.

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Heavy-Duty Internationals serving the Community Traction Company, Toledo, Ohio.



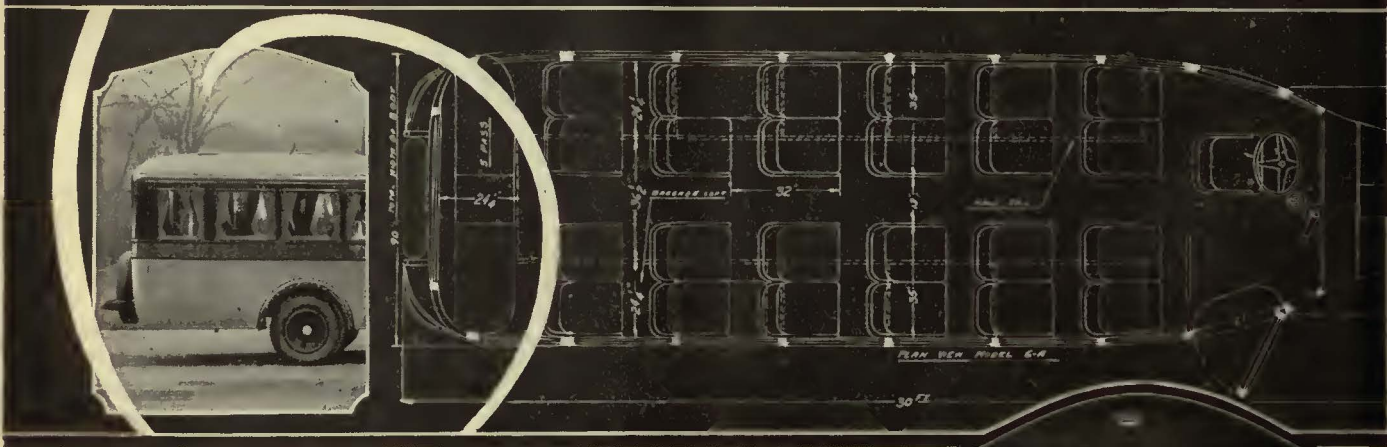
INTERNATIONAL HARVESTER TRUCKS include the new 3/4-ton "Special Delivery," the 1-ton Speed Truck, 1 1/2-ton short-wheelbase "SD" for dump and trailer work, 1 1/2-ton low-chassis "SL," and Heavy-Duty Trucks ranging up to 5-ton capacities.

Write for information in detail.



Above: A unit of the fleet of the Hoosier Engineering Company which builds steel and wood electric transmission lines all over the United States and standardizes on Heavy-Duty International Harvester trucks. International Harvester branches number 120 in the United States, largest company-owned truck and coach service organization in the world. Hoosier Engineering likes the trucks and this unmatched service. F.H. Miller, vice-president of the company, writes: "We have always considered the ability to obtain satisfactory service in any location as a major reason for standardization."

More Seats



and More Passengers to Fill Them—

BY improvements in design, Baker-Raulang Bus Bodies of the parlor chair type add more revenue-producing seats on the same length of wheelbase — and by improvements in comfort and convenience, promote public popularity to keep those seats filled.

The B-R Luggage Loft provides ample space for all luggage above the seats and so saves enough floor space to permit five additional seats.

With an exceptionally attractive roof design, the Luggage Loft, with a hand rail at its edge, allows ample headroom above the aisle for standees where regulations permit this added revenue possibility.

The passenger in the Baker-Raulang Bus rides in a deep-cushioned, comfortable seat, with attractive surroundings. His personal luggage is within easy reach at any time, safe from dust, weather and danger. By his side is a wide window, easy to open or close. When he enters or leaves he has plenty

With the exclusive Baker-Raulang Luggage Loft, the entire floor space of the bus is used for revenue-paying seats.



of room to stand upright and a conveniently-placed hand rail to guide him. He is not annoyed by luggage cluttering the aisle nor by waits while the driver stores or delivers luggage to passengers at every stop. He has a quicker, more comfortable, more convenient journey — and naturally he repeats on that bus line.

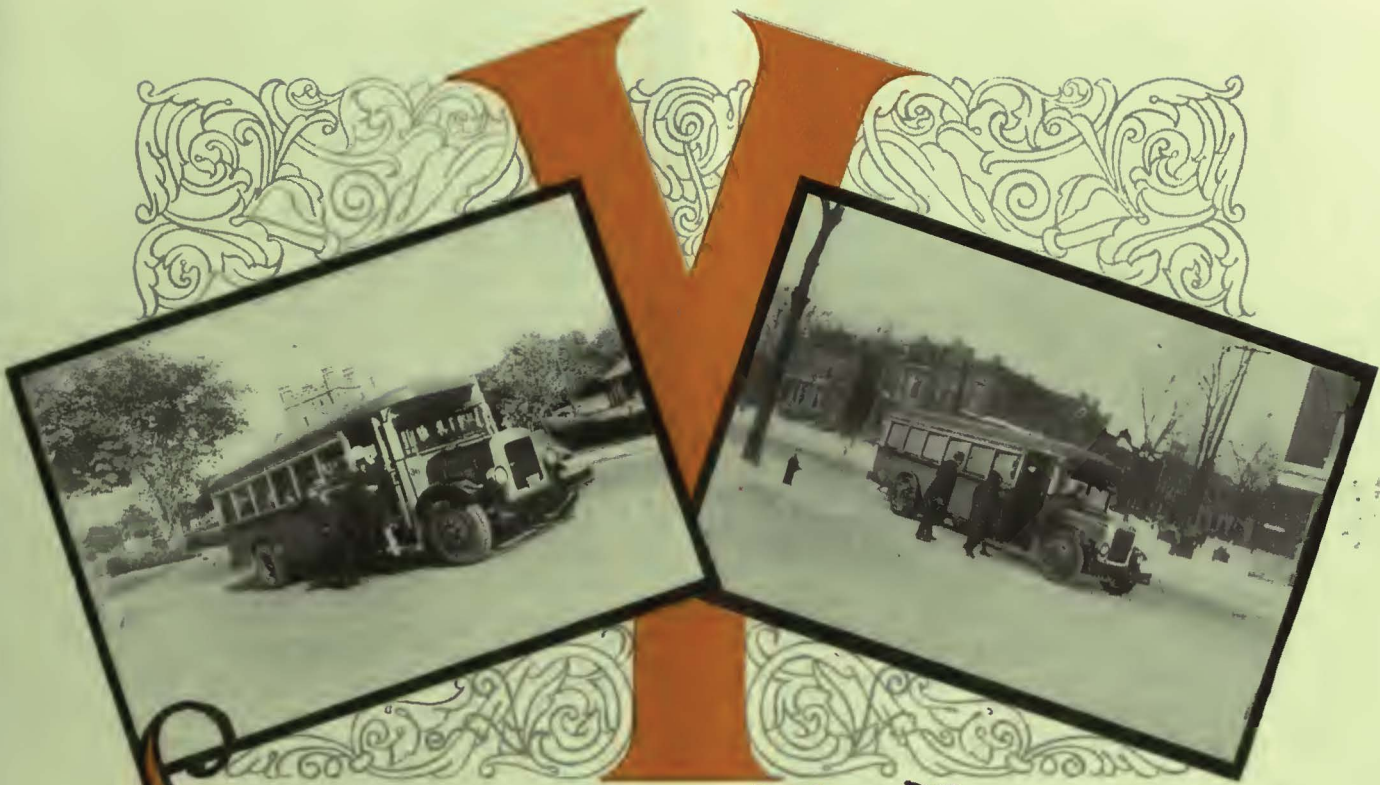


BAKER-RAULANG City Pay-Enter type bus bodies present numerous improvements in design and construction giving exceptionally comfortable seating arrangements, an unusually wide aisle, and provisions for quick and easy repairs in case of accident. A strong, comfortable, good looking

bus body with elimination of squeaks, rattles and creaks incident to many bus installations.

Further details on both types of bodies furnished upon request.

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Summer & Winter



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YELLOW COACHES

Montreal, Canada, is no place for weaklings when it comes to motor coaches.

Ice- and snow-bound for long months, operating conditions call for plenty of reserve stamina to maintain schedules. Winter grips the roadways and the intense cold frosts the windshields. For months, equipment must buck the severest conditions and, in the late spring when the break-up occurs, the streets are deeply flooded with water—sink holes twelve and eighteen inches deep.

It's a real "he" test, and 23 Type Z, 6-cylinder, 29-passenger Yellow Coaches are meeting it successfully; 8 of these Yellow Coaches went into service in August, 1925. At the end of nine months these had operated an aggregate of 352,000 miles, or 4.900





do make money!

miles per bus per month, and had carried 1,538,000 passengers on a route 5.25 miles long. Fifteen additional coaches of the same make were put into service during June, 1926, and two new cross town routes were established.

Present service consists of:

	Miles	Buses	Minutes Headway
Sherbrooke Street...	7.7	10-14	8-6
St. Hubert Street....	4.75	6-8	9-7
Outremont.....	3.55	3	8

Operating statistics now show an average per month:

	Passengers	Miles per Bus Mile	Passengers
Sherbrooke.....	225,700	64,000	3.57
New routes.....	116,650	41,650	2.80
Total	342,350	105,650	3.24

Operating expenses for the first six months of 1926 were as follows:

Maintenance, including depreciation of equipment, tools, machinery and buildings.....	9.78c. per mile
Transportation.....	15.66c. " "
General expense and administration.....	.5c. " "
Interest.....	2.23c. " "
Total	28.17c. per mile

As motor coach operation in Canada is higher than in the United States, owing to duty taxes, and other contributing causes, the Montreal Tramways Company estimate that it costs them approximately 5 cents more per mile to do business over the border. Thus, compared to costs in this country, the total cost figure would be brought down to 23.17 cents per mile.

Despite the adverse conditions of climate, Yellow Coaches are making money. Earnings on the Sherbrooke Street route approximate 35 cents per mile, and on the St. Hubert route about 30 cents per mile.



Yellow Coaches, due to the exceptional performance rendered, are widely becoming accepted as standard equipment by leading properties.

This is true in the case of the Montreal Tramways Company where originally four different makes of coaches were operated. With every opportunity to make careful comparisons this Company is standardizing on Yellow Coach equipment.

Such policies of standardization are tributes to the experience and manufacturing standards of Yellow Coach plus General Motors. Within these combined organizations may be found the most intimate knowledge pertaining to every phase of motor coach operation and manufacture. Research, operating experience, modernized methods of manufacture, financial stability; all are available to you.

YELLOW TRUCK & COACH MANUFACTURING CO.
SUBSIDIARY GENERAL MOTORS CORPORATION
5801 WEST DICKENS AVENUE, CHICAGO, ILL.





The Budd-Michelin road is paved with *proved* performance. No glamour of newness, no *promise* of performance has ever beguiled experienced bus owners into the detours of experiment.



B U D D

WHEEL COMPANY

Detroit

This Discovery Has Tripled The Life Of Culvert Iron

Scientific alloying of copper and mo-lyb-den-um with carefully refined iron has developed a culvert metal with amazing resistance to rust and corrosion, and tensile strength much greater than any material now used in corrugated culverts. Scores of tests prove it to last from four to fourteen times as long under violent corrosive attack as the best materials hitherto available.

It marks a signal victory in man's age-old battle against rust and corrosion. It is called Toncan Copper Mo-lyb-den-um Iron.

The advantages of easy handling, freedom from breakage, economical installation and supreme strength always have belonged to good corrugated culverts as a class. Now, with this new material, comes a degree of permanence never before attained.

The manufacturers listed below produce Toncan Copper Mo-lyb-den-um Culverts in all standard sizes and also perforated, with tees, elbows, crosses, etc.

They offer you culverts with three times the life at no increase in cost! Write the nearest one.

United Alloy Steel Corp.
Canton, Ohio

The following manufacturers produce Toncan Copper Mo-lyb-den-um Culverts. Write the nearest one.

The Canton Culvert & Silo Co., Canton, O.
Tri-State Culvert Manufacturing Co., Memphis, Tenn.
The Berger Manufacturing Co., Minneapolis, Minn.
The Firman L. Carswell Mfg. Co., Kansas City, Kans.
The Berger Mfg. Co. of Mass., Boston, Mass.
The Philadelphia Culvert Co., Philadelphia, Pa.
The Berger Manufacturing Co., Dallas, Tex.
The Berger Manufacturing Co., Roanoke, Va.
The Berger Manufacturing Co., Jacksonville, Fla.



UNITED ALLOY STEEL CORPORATION



The Proof Is in the Performance

Fifty more Graham Brothers Motor Coaches
for the Department of Street Railways, Detroit.

198 in all!

Proven performance clinched the order!

From the date of the initial sale, a year and
a half ago, these sturdy coaches have delivered
over seven million miles of safe, speedy, low-
cost transportation.

Little wonder this latest order was exclusively
for Graham Brothers product!

21 Passenger Street Car Type Motor Coach Complete

\$3815

f. o. b. Detroit

GRAHAM BROTHERS

Evansville — **DETROIT** — Stockton
A DIVISION OF DODGE BROTHERS, INC.
GRAHAM BROTHERS (CANADA) LIMITED — TORONTO, ONTARIO

GRAHAM BROTHERS MOTOR COACHES

SOLD BY DODGE BROTHERS DEALERS EVERYWHERE



Convention Exhibits

Cleveland, Ohio

October 4 to 8, 1926

Present indications are that this year's Convention, which will be held in Cleveland from October 4 to October 8 will be one of the greatest, if not the greatest, in the history of the American Electric Railway Association.

More exhibit space has been sold than in any previous Convention.

Arrangements have been made for larger and more diversified exhibits than at any previous Convention.

All indications point to the greatest gathering of transportation men and the greatest car and equipment exhibit in history.

Interest in new design and new developments has never been keener. Railway men have learned that modern equipment pays. They are alive to the possibilities and to the need of replacing existing obsolete equipment, and are seeking information on parts and equipment that will make possible more modern operation.

Every manufacturer has the four opportunities outlined here to turn this interest into sales.



Convention Number

Electric Railway Journal

September 25, 1926

The Annual Convention Number of *Electric Railway Journal* has been the backbone of a successful Convention sales program since the beginning of Convention exhibits.

Reaching the entire industry one full month before the Convention opens, it anticipates and paves the way for the Convention itself by providing a comprehensive discussion of the most important subjects before the industry.

This year's issue will be devoted to an authoritative analysis and array of a year's experience on the most important questions now confronting the industry. Do modern cars and modern methods really pay?

The far-reaching influence of the editorial pages has made the advertising pages of the Convention Number the most valuable medium of Convention selling. Before—during—after the Convention its pages are used as an authentic guide to the industry's important operators and manufacturers.

The manufacturer who uses it adequately and intelligently has assured for his product the maximum attention throughout the industry as well as at the Convention.

There will be a thousand extra circulation copies at the Convention.

The closing date is September 15, 1926.



Convention Dailies
Electric Railway Journal
(3 Issues)
October 5, 6, 7, 1926

All benefit of Convention attendance with knowledge of daily happenings. Three Convention Dailies are edited on "spot" at Cleveland and will appear on Monday, Wednesday and Thursday at the Convention. These three "Dailies" give the delegates the only news of the daily Conventions and activities. The issues include, in addition, the events of the preceding day and present the program for the current day.

In an intimate manner of treating personal matters has made "The Daily" a popular and featured feature of the Convention.

6,000 copies of the Daily are distributed during Convention week. All registered railway men will receive a copy at their breakfast. Additional copies will be distributed at the Auditorium and meeting.

Use them to stimulate active and immediate action in your exhibit.

Advertising copy and plates intended for use in the three issues of the Daily should be sent to our New York office not later than September 15, 1926.



Convention Report Number

Electric Railway Journal,
October 9, 1926

The Convention Report Number of *Electric Railway Journal* is mailed 24 hours after the close of the Convention.

Carrying the first complete reports of the Convention, it brings to the returning delegates and to those who were unable to attend, a permanent record of the best thinking and the important developments of the Convention.

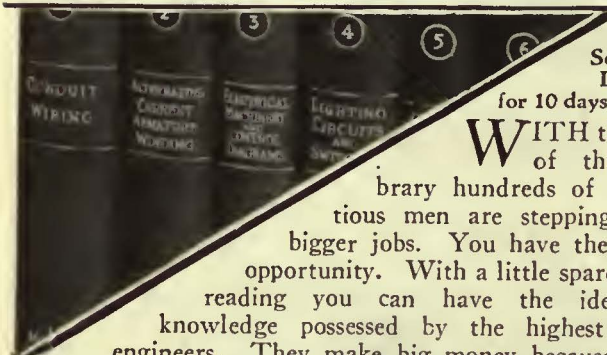
The Report Number preserves the worth-while happenings for reference and study. Because it is kept and referred to for months the advertising pages provide "a better than ordinary" opportunity for lasting sales messages.

Competition for the railway man's time is extremely keen. Stimulate and maintain his interest by taking adequate advantage of these four proved sales opportunities.





These books make promotion sure!



See this Library for 10 days FREE

WITH the aid of this library hundreds of ambitious men are stepping into bigger jobs. You have the same opportunity. With a little spare time reading you can have the identical knowledge possessed by the highest paid engineers. They make big money because they know electricity from A to Z. Knowledge counts. With the American Electricians' Library to guide you, you can make promotion sure.

American Electricians' Library

Six Volumes—over 2,000 pages—fully illustrated

No books dealing with the work of the practical electrician were ever so complete—so authoritative—so practical in text and illustrations as these.

The illustrations and wiring diagrams alone represent an expenditure of many thousands of dollars. There are more than a thousand of them—all clearly drawn—all self explanatory—all designed to enable the reader to grasp the information given with a minimum of effort.

The man who puts this set of books into his library can do so knowing that he has the utmost in practical electrical job-books—a set that will give him, in language he can understand, all the information he needs in order to get ahead in his work.

The Standard Work for Experienced Electricians

The American Electricians' Library is accurate, thorough, up-to-date. It is the result of years of experience with electrical problems. The man who has it has the best. The Library covers the whole field. Nothing is omitted. The solution of every problem is plainly worded or explained with a clear diagram or illustration. The little stickers and the big troublesome problems are all worked out in advance for you. There can be only one result from studying these books a few minutes each day—more money in your pocket.

Over a Thousand Wiring Diagrams

The thousand wiring diagrams in these six books are alone worth the price of the entire library to any practical electrician. Many of these diagrams are unobtainable elsewhere; many more are very hard to get from any other source; all of them are much clearer and more helpful than most wiring diagrams available. These wiring diagrams alone make Croft's American Electricians' Library a great set of books.

No money down—small monthly payments

Fill in and mail the coupon below and we will send you the six volumes of Croft's American Electricians' Library for ten days' Free Examination. We take all the risk—pay all the charges. You assume no obligation of any kind. If you find the books to be what you want and decide to keep them, send us \$2.00 in ten days. The balance you pay at the rate of \$2.00 a month until the special price of \$16.00 has been paid.

FREE EXAMINATION COUPON

McGraw-Hill Book Co., Inc., 370 Seventh Ave., New York.

Ship to me, charges prepaid, the six volumes of Croft's American Electricians' Library, price \$16.00. If satisfactory, I will send you \$2.00 in ten days and \$2.00 a month until the special price of \$16.00 has been paid. If not wanted I will write for shipping instructions.

Name

Home Address

City and State

Firm and Employer

Occupation E. 8-28-26

PANTASOTE

Trade Mark

Seat and Curtain Materials
There is no substitute for Pantasote

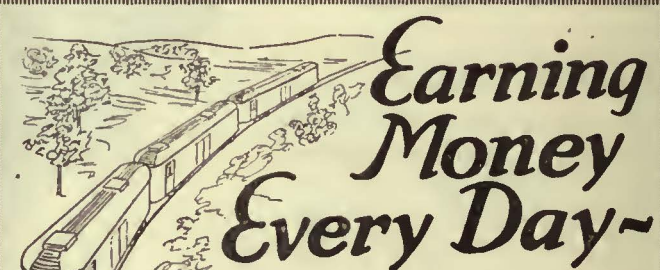
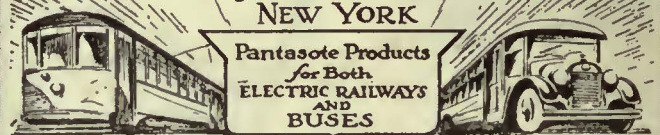
AGASOTE

Trade Mark

Roofing—Headlining—Wainscoting
The only homogeneous panel board

*standard
for electric railway cars
and motor buses*

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



A Phoenix Electric Refrigerator Car is actively on the job making deliveries and making money every day of the week. No time is lost in pre-cooling as is necessary with ice refrigerator cars.

In winter, Phoenix Electric Refrigerator Cars serve to protect perishable products against low outside temperatures.

More than 1,000,000 lbs. of meats and other perishable products have been carried in one Phoenix Electric Refrigerator Car in a year.

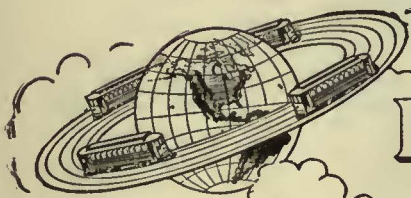
Any standard express or freight car can be easily converted into a Phoenix Electric Refrigerator Car in your own shops. Our Service Department will co-operate with you or with any car builder you may direct.

Do not hesitate to write us on any phase of the subject. Complete descriptive literature on request.



The Phoenix Ice Machine Co.
Cleveland, Ohio

The creation and maintenance of car advertising space values requires the same degree of highly specialized knowledge as the construction and maintenance of railroads. Such tasks should be delegated only to those of widest experience and longest record of success.



Barron G. Collier

INCORPORATED

CANDLER BLDG. NEW YORK

You're having brush trouble

**CORRECT IT
USE LE CARBONE CARBON BRUSHES**

They talk for themselves

**COST MORE PER BRUSH
COST LESS PER CAR MILE**

W. J. Jeandron
Hoboken Factory Terminal,
Building F, Fifteenth Street, Hoboken, N. J.
Pittsburgh Office: 634 Wabash Bldg.
Chicago Office: 1657 Monadnock Block
San Francisco Office: 525 Market Street
Canadian Distributors: Lyman Tube & Supply Co., Ltd.
Montreal and Toronto

**Greater Service
Per Dollar Invested**



**"Tiger" Bronze Axle and
Armature Bearings**

More-Jones "Tiger" Bronze castings for axle and armature-bearing service was one of our early achievements. This is probably the most widely known bronze on the market. It has stood the test of time. There is nothing better for long, efficient and most economical results. Let us quote you.

More-Jones Brass & Metal Co.
St. Louis, Mo.

**MORE-JONES
QUALITY PRODUCTS**

Griffin Wheel Company
410 North Michigan Ave.
Chicago, Ill.

**GRIFFIN
F. C. S.
WHEELS**

**For Street and Interurban
Railways**

FOUNDRIES:

Chicago	Boston	St. Paul
Detroit	Kansas City	Los Angeles
Denver	Council Bluffs	Tacoma

KERITE
AN INVESTMENT



When you put your money into KERITE you make an investment in service. You do more than buy conductors, insulation, and protection. You obtain the best possible combination of the most desirable qualities in permanent form. KERITE remains long after the price is forgotten.

KERITE INSULATED WIRE & CABLE COMPANY
NEW YORK CHICAGO



Cold Dinners for *your* passengers?

Not if you use

AJAX
BABBITT for ARMATURES

keeps the rolling stock rolling



The Ajax Metal Company

Established 1880

PHILADELPHIA

NEW YORK CHICAGO BOSTON CLEVELAND

Business Wants

THE *Searchlight* Section of this paper represents a meeting place for men and concerns who have immediate business "wants" to fill—the section covers

Agencies Wanted
Agents Wanted
Books and Periodicals
Business Opportunities
Civil Service Opportunities
Contracts Wanted
Desk Room for Rent or Wanted
Educational
Employment Agencies
Employment Service
Foreign Business
For Exchange
For Rent
For Sale
Franchises
Labor Bureaus
Miscellaneous Wants

New Industries Wanted
Office Space for Rent or Wanted
Partners Wanted
Patent Attorneys
Patents for Sale
Plants for Sale
Positions Vacant
Positions Wanted
Property for Sale
Representatives Wanted
Salesmen Available
Salesmen Wanted
Spare Time Work Wanted
Sub-Contracts Wanted
Tutoring
Vacation Work Wanted
Work Wanted

"SEARCHLIGHT"

Nuttall



The new

Nuttall Form US 20A

Timken Roller Bearing Trolley Base

A really *new* trolley base, simplified and engineered to the same high standards of efficiency and low maintenance as the modern car motor. Incorporates the famous Timken Roller Bearing—a tapered double-race roller bearing designed by this manufacturer especially for trolley base service.

Profitably interesting features include extreme sensitiveness, with swiveling strains evenly distributed on bearings; oil and grease reservoirs for lubrication of bearings and pole socket axle pin respectively; quick, easy lubrication only once in six months.

Full specifications on request.



R.D. NUTTALL COMPANY
PITTSBURGH  PENNSYLVANIA

All Westinghouse Electric & Mfg. Co. District Offices are Sales Representatives in the United States for the Nuttall Electric Railway and Mine Haulage Products. In Canada: Lyman Tube & Supply Co., Ltd., Montreal and Toronto.

THE BABCOCK & WILCOX COMPANY

85 LIBERTY STREET, NEW YORK

Builders since 1868 of
Water Tube Boilers
of continuing reliability

BRANCH OFFICES

BOSTON, 49 Federal Street
PHILADELPHIA, Packard Building
PITTSBURGH, Farmers Deposit Bank Building
CLEVELAND, Guardian Building
CHICAGO, Marquette Building
CINCINNATI, Traction Building
ATLANTA, Candler Building
PHOENIX, ARIZ., Heard Building
DALLAS, TEX., 2001 Magnolia Building
HONOLULU, H. T., Castle & Cooke Building
PORTLAND, ORE., 805 Gasco Building



WORKS
Bayonne, N. J.
Barberton, Ohio

Makers of Steam Superheaters
since 1898 and of Chain Grate
Stokers since 1893

BRANCH OFFICES

DETROIT, Ford Building
NEW ORLEANS, 344 Camp Street
HOUSTON, TEXAS, 1011-13 Electric Building
DENVER, 444 Seventeenth Street
SALT LAKE CITY, 405-6 Kearns Building
SAN FRANCISCO, Sheldon Building
LOS ANGELES, 404-6 Central Building
SEATTLE, L. C. Smith Building
HAVANA, CUBA, Calle de Aguiar 104
SAN JUAN, Porto Rico, Royal Bank Building

Lorain Special Trackwork Girder Rails

Electrically Welded Joints

THE LORAIN STEEL COMPANY

Johnstown, Pa.

Sales Offices:

Atlanta Chicago Cleveland New York
Philadelphia Pittsburgh Dallas

Pacific Coast Representative:

Los Angeles United States Steel Products Company
Portland San Francisco Seattle

Export Representative:

United States Steel Products Company, New York, N. Y.



Bethlehem Products for Electric Railways

Tee and Girder Rails; Machine Fitted Joints;
Splice Bars; Hard Center Frogs; Hard Center
Mates; Rolled Alloy Steel Crossings; Abbott and
Center Rib Base Plates; Rolled Steel Wheels and
Forged Axles; Tie Rods; Bolts; Tie Plates and
Pole Line Material.

Catalog Sent on Request

BETHLEHEM STEEL COMPANY, Bethlehem, Pa.

BETHLEHEM

Wharton Special Trackwork

Trackwork of superior quality,
incorporating the famous
Tisco Manganese Steel.

WM. WHARTON JR. & CO., Inc.
EASTON, PA.

OFFICES:

Boston Chicago El Paso Montreal New York
Philadelphia Pittsburgh San Francisco Scranton

B. A. HEGEMAN, Jr., President H. A. HEGEMAN, First Vice-Pres. and Treas.
F. T. SARGENT, Secretary W. C. PETERS, Vice-Pres. Sales and Engineering

National Railway Appliance Co.

Grand Central Terminal, 452 Lexington Ave., Cor. 45th St., New York

BRANCH OFFICES

Munsey Bldg., Washington, D. C. 100 Boylston St., Boston, Mass
Hegeman-Castle Corporation, Railway Exchange Building, Chicago, Ill.

RAILWAY SUPPLIES

Tool Steel Gears and Pinions	Ft. Pitt Spring & Mfg. Co., Springs
Anglo-American Varnish Co., Varnishes, Enamels, etc.	Flaxilnum Insulation
National Hand Holds	Anderson Slack Adjusters
Genesco Paint Oils	Economy Electric Devices Co., Power Saving and Inspection Meters
Dunham Hopper Door Device	Yellow Coach Mfg. Company— Single and Double-deck Buses
Garland Ventilators	
Walter Tractor Snow Plows	
Feasible Drop Brake Staffs	

SPECIALISTS

in the

**Design and Manufacture
of**

**Standard—Insulated—and
Compromise Rail Joints**

The Rail Joint Company
165 Broadway, New York City

SEARCHLIGHT SECTION

OFFICIAL PROPOSAL

Bids: Sept. 10.

Track Laying City Hall to and Including Fern Rock Terminal Yard

BROAD STREET SUBWAY
CONTRACT NO. 126
DEPARTMENT OF CITY TRANSIT
CITY OF PHILADELPHIA
11TH FLOOR, 1211 CHESTNUT STREET
Philadelphia, August 16, 1926.

Sealed proposals, addressed to the undersigned, at the office above mentioned, will be received until 11 o'clock a.m. (Eastern Standard Time), on Friday, September 10, 1926, and publicly opened immediately thereafter, for laying track in the Broad Street Subway, the Fern Rock Terminal Yard, and the Shops in the yard.

Plans and specifications may be seen at the office of the Department on the 12th floor, 1211 Chestnut Street, and copies of the same, with blank forms for proposals, will be supplied to intending bidders upon application. A deposit of Fifty (50) dollars will be required for the plans and specifications. This deposit will be refunded upon return of the plans and specifications in good condition.

Bidders must be skilled and regularly engaged in the class of work for which they are competing.

No bid will be considered unless accompanied by a certified check on a responsible bank or trust company in favor of the City of Philadelphia, to the amount of five (5)

OFFICIAL PROPOSALS

per centum of the sum of such bid, in accordance with the provisions of an ordinance approved March 7, 1924, as amended by ordinance approved July 2, 1924, and reprinted in full in the specifications.

The Director reserves the right to reject any or all bids, as he may deem best for the interest of the City of Philadelphia.

H. E. EHLERS,
Director.

POSITIONS WANTED

AVAILABLE on short notice. A man of twenty years' practical electrical railway transportation experience with two large companies, in capacity of, superintendent, traffic manager, supervisor of schedules, superintendent of employment, foreman of car stations. Would consider connection with smaller properties. Salary secondary. PW-924, Electric Railway Journal, Star Bldg., St. Louis, Mo.

OPERATING executive, superintendent transportation, motive power and equipment. Broad experience and a successful record on city, one-man safety, interurban and bus properties. Labor, industrial, public relations, traffic problems. Co-ordination of railway and bus service. Desires to re-enter operating field. University graduate. All references. PW-921 Electric Railway Journal, 7 South Dearborn Street, Chicago, Ill.

POSITIONS WANTED

ENGINEER with extensive experience in construction and maintenance of paved and open track, overhead lines, power plants, etc., desires position as engineer of way or roadmaster. PW-923, Electric Railway Journal, 1600 Arch St., Phila., Pa.

SERVICE TO THE INDUSTRY

THE LANG BODY COMPANY maintains a complete Service Department on repairing and refinishing of bus bodies. This special department is of ample size so that a complete bus can be driven to our plant and completely refinished. We will repair everything except the mechanical parts of the chassis. Speedy and accurate work is assured. For further information and estimates write

Service Department,
The Lang Body Company,
Cleveland, Ohio

FOR SALE

14 BIRNEY SAFETY CARS

Brill Built
West. 508 or G.E. 264 Motors
Cars Complete—Low Price—Fine Condition
ELECTRIC EQUIPMENT CO.
Commonwealth Bldg., Philadelphia, Pa.

"The Standard for Rubber Insulation"

INSULATED WIRES and CABLES

"Okonite," "Manson," and Dundee "A" "B" Tapes

Send for Handbook

The Okonite Company

The Okonite-Callender Cable Company, Inc.

Factories, PASSAIC, N. J. PATERSON, N. J.

Sales Offices: New York Chicago Pittsburgh St. Louis Atlanta
Birmingham San Francisco Los Angeles Seattle

Pettingell-Andrews Co., Boston, Mass.

F. D. Lawrence Electric Co., Cincinnati, O.

Novelty Electric Co., Phila., Pa.

Can. Rep.: Engineering Materials Limited, Montreal.

Cuban Rep.: Victor G. Mendoza Co., Havana.

Waterproofed Trolley Cord



Is the finest cord that science and skill can produce. Its wearing qualities are unsurpassed.

FOR POSITIVE SATISFACTION ORDER
SILVER LAKE

If you are not familiar with the quality you will be surprised at its ENDURANCE and ECONOMY.

Sold by Net Weights and Full Lengths

SILVER LAKE COMPANY

Manufacturers of bell, signal and other cords.

Newtonville, Massachusetts



Reg. U. S. Pat. Office

AMELECTRIC PRODUCTS

BARE COPPER WIRE AND CABLE

TROLLEY WIRE

WEATHERPROOF WIRE AND CABLE

PAPER INSULATED UNDERGROUND CABLE

MAGNET WIRE

AMERICAN ELECTRICAL WORKS
PHILLIPSDALE, R. I.

Boston, 176 Federal; Chicago, 20-32 West Randolph Street;
Cincinnati, Tracton Bldg.; New York, 100 E. 42nd St.

The Hardware makes the line
Hubbard makes the Hardware

Hubbard and COMPANY
PITTSBURGH • OAKLAND, CAL. • CHICAGO

WHAT AND WHERE TO BUY

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

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

Air Brakes
Westinghouse Air Brake Co.

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

Armature Shop Tools
Elec. Service Supplies Co.

Automatic Return Switch
Stands
Ramapo Ajax Corp.

Automatic Safety Switch
Stands
Ramapo Ajax Corp.

Axles
Bemis Car Truck Co.
Bethlehem Steel Co.
Brill Co., The J. G.
Carnegie Steel Co.
Johnson & Co., J. R.
National Ry. Appliance Co.
St. Louis Car Co.
Westinghouse E. & M. Co.

Axles, Carbon Vanadium
Johnson & Co., J. R.

Axles, Front
Shuler Axle Co.

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

Babbitt Metal
Ajax Metal Co.
Johnson & Co., J. R.
More-Jones Brass and Metal Co.

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

Bearings and Bearing Metals
Ajax Metal Co.
Bemis Car Truck Co.
Brill Co., The J. G.
General Electric Co.
More-Jones Brass and Metal Co.
St. Louis Car Co.
Westinghouse E. & M. Co.

Bearings, Center and Roller
Side
Stucki Co., A.

Bells & Buzzers
Consolidated Car Heating Co.

Bells and Gongs
Brill Co., The J. G.
Elec. Service Supplies Co.
St. Louis Car Co.

Benders, Rail
Railway Trackwork Co.

Bodies, Bus
Cummings Car & Coach Co.
Baker-Raulang Co., The

Bodies, Passenger Car
Baker-Raulang Co., The

Body Material, Haskellite and Plymet
Haskellite Mfg. Corp.

Bolters
Babcock & Wilcox Co.

Band Testers
American Steel & Wire Co.
Electric Service Supplies Co.

Bonding Apparatus
American Steel & Wire Co.
Electric Railway Improvement Co.
Elec. Service Supplies Co.
Ohio Brass Co.
Railway Trackwork Co.
Una Welding & Bonding Co.

Bonds, Rail
Amer. Steel & Wire Co.
Electric Railway Improvement Co.

Bolts, Service Supplies Co.
General Electric Co.
Ohio Brass Co.
Railway Trackwork Co.
Una Welding & Bonding Co.
Westinghouse E. & M. Co.

Book Publishers
McGraw-Hill Book Co.

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

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

Brake Shoes
American Brake Shoe & Foundry Co.
Bemis Car Truck Co.
Brill Co., The J. G.
St. Louis Car Co.

Brakes, Brake Systems and Brake Parts
Bemis Car Truck Co.
Brill Co., The J. G.
General Electric Co.
National Brake Co.
St. Louis Car Co.
Safety Car Devices Co.
Westinghouse Tr. Br. Co.

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

Bulkheads
Haskellite Mfg. Corp.

Bus Seats
Hale-Kilburn Co.

Buses, Motor
Brill Co., The J. G.
Cummings Car & Coach Co.
Graham Bros.
International Harvester Co.
St. Louis Car Co.
Yellow Truck & Coach Mfg. Co.

Bushings, Case Hardened and Manganese
Bemis Car Truck Co.
Brill Co., The J. G.
St. Louis Car Co.

Cables (See Wires and Cables)

Cambrio Tapes, Yellow and Black Varnish
Irvington Varnish & Ins. Co.

Carbon Brushes (See Brushes, Carbon)

Car Lighting Fixtures
Elec. Service Supplies Co.

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

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Bethlehem Steel Co.

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

Cars, Gas, Rail
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St. Louis Car Co.

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Brill Co., The J. G.
Cummings Car & Coach Co.
Kuhlman Car Co., G. C.
National Ry. Appliance Co.
St. Louis Car Co.
Wason Mfg. Co.

Cars, Second Hand
Electric Equipment Co.

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

Castings, Brass Composition or Copper
Ajax Metal Co.
More-Jones Brass & Metal Co.

Castings, Gray Iron and Steel
American Steel Foundries
Bemis Car Truck Co.
St. Louis Car Co.
Wm. Wharton, Jr. & Co.

Castings, Malleable and Brass
Bemis Car Truck Co.
St. Louis Car Co.

Catchers and Retrievers, Trolley
Elec. Service Supplies Co.
Ohio Brass Co.
Wood Co., Chas. N.

Catenary Construction
Archbold-Brady Co.

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

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Haskellite Mfg. Corp.

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

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

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

Cleaners and Scrapers Track
(See also Snow-Flows, Sweepers and Brooms)
Brill Co., The J. G.
Ohio Brass Co.
St. Louis Car Co.

Clusters and Sockets
General Electric Co.

Coil Banding and Winding Machines
Elec. Service Supplies Co.
Westinghouse E. & M. Co.

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

Coils, Choke and Klekking
Elec. Service Supplies Co.
General Electric Co.
Westinghouse E. & M. Co.

Coin Counting Machines
Cleveland Fare Box Co.
International Register Co.

Coin Sorting Machines
Cleveland Fare Box Co.

Coin Wrappers
Cleveland Fare Box Co.

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Elec. Service Supplies Co.
General Electric Co.
Westinghouse E. & M. Co.
Wood Co., Chas. N.

Commutator Truing Devices
General Electric Co.

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General Electric Co.
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Westinghouse Tr. Br. Co.

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Elec. Service Supplies Co.
Ohio Brass Co.

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

Controller Regulators
Elec. Service Supplies Co.

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

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American Brown Boveri Elec. Corp.
General Electric Co.
Westinghouse E. & M. Co.

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Brill Co., The J. G.
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Silver Lake Co.

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Samson Cordage Works
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Ohio Brass Co.
St. Louis Car Co.
Westinghouse Tr. Br. Co.

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Truck Mounted
Baker-Raulang Co., The

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Electric Service Supplies Co.
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Crossing Foundations
International Steel Tie Co.
Crossings
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Wm. Wharton, Jr. & Co.

Crossings, Frogs & Switches
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Wm. Wharton, Jr. & Co.

Crossings, Manganese
Bethlehem Steel Co.
Ramapo Ajax Corp.
Wm. Wharton, Jr. & Co.

Crossings, Track (See Track Special Work)

Crossings, Trolley
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Westinghouse E. & M. Co.

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Brill Co., The J. G.
Morton Mfg. Co.
Pantastote Co., Inc.
St. Louis Car Co.

Dealer's Machinery & Second Hand Equipment
Elec. Equipment Co.
Lang Body Co.

Dealer Second Hand Balls
Electric Equipment Co.

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Derolling Switches
Ramapo Ajax Corp.

Destination Signs
Elec. Service Supplies Co.

Detective Service
Wish-Service, P. Edward

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Consolidated Car Heating Co.
Nat'l Pneumatic Co., Inc.
Safety Car Devices Co.

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Brill Co., The J. G.
General Electric Co.
Hale-Kilburn Co.
Morton Mfg. Co.
St. Louis Car Co.

Doors, Folding Vestibule
Nat'l Pneumatic Co., Inc.
Safety Car Devices Co.

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Amer. Steel & Wire Co.
Electric Service Supplies Co.
Ohio Brass Co.

Dryers, Sand
Electric Service Supplies Co.
Ohio Brass Co.
Westinghouse E. & M. Co.

Ears
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Ohio Brass Co.
Westinghouse E. & M. Co.

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Railway Trackwork Co.
Electric Locomotives
St. Louis Car Co.

Electric Refrigerator Cars
Phoenix Ice Machine Co.

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Railway Trackwork Co.
Una Welding & Bonding Co.

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Bibbins, J. Rowland
Buchanan & Lays Corp.
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Hemphill & Wells
Holst, Engelhardt W.
Jackson, Walter
Kelker & DeLew
Kelly, Cooke & Co.
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Richey, Albert S.
Sanderson & Porter
Stevens & Wood
Stnne & Webster
White Eng. Corp., The J. G.

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Percy Mfg. Co.

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Consolidated Car Fender Co.
St. Louis Car Co.
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Wood Co., Chas. N.

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Floors
Haskellite Mfg. Corp.

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Carnegie Steel Co.

Frogs & Crossings, Tee Rail
Bethlehem Steel Co.
Ramapo Ajax Corp.
Wm. Wharton, Jr. & Co.

Frogs, Track (See Track Work)

Frogs, Trolley
Electric Service Supplies Co.
Ohio Brass Co.
Westinghouse E. & M. Co.

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American Brown Boveri Elec. Corp.

Funnel Castings
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Consolidated Car Heating Co.
General Electric Co.
Westinghouse E. & M. Co.

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General Electric Co.

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Westinghouse Tr. Br. Co.

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

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Westinghouse E. & M. Co.

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Brill Co., The J. G.
St. Louis Car Co.

Gauges, Oil and Water
Ohio Brass Co.

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Brill Co., The J. G.
Carnegie Steel Co.

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Chillingworth Mfg. Co.
Electric Service Supplies Co.
Westinghouse E. & M. Co.

Gears and Pinions
Bemis Car Truck Co.
Electric Service Supplies Co.
General Electric Co.
Nat'l Ry. Appliance Co.
Nuttall Co., R. D.

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General Electric Co.

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

Gilder Rails
Bethlehem Steel Co.
Lorsin Steel Co.

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Greases (See Lubricants)

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Railway Trackwork Co.

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Railway Trackwork Co.

Grinders, Portable Electric
Railway Trackwork Co.

Grinding Bricks and Wheels
Railway Trackwork Co.

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Wm. Wharton, Jr. & Co.

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Ramapo Ajax Corp.
Wm. Wharton, Jr. & Co.

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Elec. Service Supplies Co.
Ohio Brass Co.

Harps, Trolley
Elec. Service Supplies Co.
More-Jones Brass & Metal Co.

Nuttall Co., R. D.
Star Brass Works

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General Electric Co.
Ohio Brass Co.
St. Louis Car Co.

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Haskellite Mfg. Corp.
Pantastote Co., Inc.

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Consolidated Car Heating Co.
Gold Car Heat. & Ltg. Co.
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Smith Heater Co., Peter Water
Heaters, Car Stove
Smith Heater Co., Peter Water

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Hose, Bridges
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(Continued on page 44)

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St. Louis Car Co.
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St. Louis Car Co.
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Illinois Steel Co.
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Morton Mfg. Co.
- Steel Flooring
Morton Mfg. Co.
- Steps, Car
Brill Co., The J. G.
Morton Mfg. Co.
- Stokers, Mechanical
Babcock & Wilcox Co.
Westinghouse E. & M. Co.
- Storage Batteries (See Batteries, Storage)
- Strain Insulators
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Ohio Brass Co.
Westinghouse E. & M. Co.
- Strand
American Steel & Wire Co.
Roebling's Sons Co., J. A.
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- Superheaters
Babcock & Wilcox Co.
Sweepers, Snow (See Snow Plows, Sweepers and Brooms)
- Switch Stands and Fixtures
Ramapo-Ajax Corp.
- Switches and Switchboards
American Brown Boveri Elec. Corp.
Consolidated Car Heating Co.
Electric Service Supplies Co.
General Electric Co.
Westinghouse E. & M. Co.
- Switches, Tee Rail
Ramapo Ajax Corp.
- Switches, Track (See Track Special Work)
- Tampers, Tie
Railway Trackwork Co.
- Tapes and Cloths (See Insulating Cloth, Paper and Tape)
- Tee Rail Special Track Work
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- Testing Instruments (See Instruments, Electrical Measuring, Testing, etc.)
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Consolidated Car Heating Co.
Gold Car Heating & Lighting Co.
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Smith Heater Co., Peter
- Ticket Choppers and Destroyers
Electric Service Supplies Co.
Ties and Tie Rods, Steel
Carnegie Steel Co.
International Steel Tie Co.
Ties, Mechanical
Dayton Mechanical Tie Co.
Ties, Wood Cross (See Poles, Ties, Posts, etc.)
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Carnegie Steel Co.
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Ramapo Ajax Corp.
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Brill Co., The J. G.
St. Louis Car Co.
- Tractors, Industrial Electric
Baker-Raulang Co., The
- Transformers
American Brown Boveri Elec. Corp.
General Electric Co.
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Brill Co., The J. G.
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- Trucks, Motor
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ALPHABETICAL INDEX TO ADVERTISEMENTS

A	F	L	S																																																																																																																																																																																																										
<table border="0" style="width: 100%;"> <tr><td style="text-align: right;">Page</td><td></td></tr> <tr><td>Ajax Metal Co., The.....</td><td>39</td></tr> <tr><td>American Brass Co., The.....</td><td>45</td></tr> <tr><td>American Brown Boveri Electric Corp.</td><td>14, 15</td></tr> <tr><td>American Car Co.....</td><td>47</td></tr> <tr><td>American Electrical Works.....</td><td>41</td></tr> <tr><td>American Steel Foundries.....</td><td>4</td></tr> <tr><td>American Steel & Wire Co.....</td><td>43</td></tr> <tr><td>Anaconda Copper Mining Co.....</td><td>45</td></tr> <tr><td>Archbold-Brady Co.....</td><td>22</td></tr> </table>	Page		Ajax Metal Co., The.....	39	American Brass Co., The.....	45	American Brown Boveri Electric Corp.	14, 15	American Car Co.....	47	American Electrical Works.....	41	American Steel Foundries.....	4	American Steel & Wire Co.....	43	Anaconda Copper Mining Co.....	45	Archbold-Brady Co.....	22	<table border="0" style="width: 100%;"> <tr><td style="text-align: right;">Page</td><td></td></tr> <tr><td>Ford, Bacon & Davis.....</td><td>22</td></tr> <tr><td>"For Sale" Ads.....</td><td>41</td></tr> </table> <table border="0" style="width: 100%;"> <tr><td style="text-align: center;">G</td><td></td></tr> <tr><td>General Electric Co., 20, Back Cover</td><td></td></tr> <tr><td>Gold Car Heating & Ltg. Co.....</td><td>45</td></tr> <tr><td>Graham Bros.</td><td>33</td></tr> <tr><td>Griffin Wheel Co.....</td><td>38</td></tr> </table> <table border="0" style="width: 100%;"> <tr><td style="text-align: center;">H</td><td></td></tr> <tr><td>Hale-Kilburn Co.....</td><td>46</td></tr> <tr><td>Haskelite Mfg. Corp.....</td><td>46</td></tr> <tr><td>"Help Wanted" Ads.....</td><td>41</td></tr> <tr><td>Hemphill & Wells.....</td><td>22</td></tr> <tr><td>Holst, Englehardt W.....</td><td>22</td></tr> <tr><td>Hubbard & Co.....</td><td>41</td></tr> </table> <table border="0" style="width: 100%;"> <tr><td style="text-align: center;">I</td><td></td></tr> <tr><td>International Harvester Co.....</td><td>25</td></tr> <tr><td>International Oxygen Co.....</td><td>23</td></tr> <tr><td>International Register Co.....</td><td>43</td></tr> <tr><td>International Steel Tie Co., The. 7</td><td></td></tr> <tr><td>Irrington Varnish & Insulator Co.</td><td>43</td></tr> </table> <table border="0" style="width: 100%;"> <tr><td style="text-align: center;">J</td><td></td></tr> <tr><td>Jackson, Walter.....</td><td>22</td></tr> <tr><td>Jeandron, W. J.....</td><td>38</td></tr> <tr><td>Johnson & Co., Inc., J. R.....</td><td>23</td></tr> </table> <table border="0" style="width: 100%;"> <tr><td style="text-align: center;">K</td><td></td></tr> <tr><td>Kelker, DeLeuw & Co.....</td><td>22</td></tr> <tr><td>Kelly, Cooke & Co.....</td><td>23</td></tr> <tr><td>Kerite Ins. Wire & Cable Co.....</td><td>38</td></tr> <tr><td>Kuhlman Car Co.....</td><td>47</td></tr> </table>	Page		Ford, Bacon & Davis.....	22	"For Sale" Ads.....	41	G		General Electric Co., 20, Back Cover		Gold Car Heating & Ltg. Co.....	45	Graham Bros.	33	Griffin Wheel Co.....	38	H		Hale-Kilburn Co.....	46	Haskelite Mfg. Corp.....	46	"Help Wanted" Ads.....	41	Hemphill & Wells.....	22	Holst, Englehardt W.....	22	Hubbard & Co.....	41	I		International Harvester Co.....	25	International Oxygen Co.....	23	International Register Co.....	43	International Steel Tie Co., The. 7		Irrington Varnish & Insulator Co.	43	J		Jackson, Walter.....	22	Jeandron, W. J.....	38	Johnson & Co., Inc., J. R.....	23	K		Kelker, DeLeuw & Co.....	22	Kelly, Cooke & Co.....	23	Kerite Ins. Wire & Cable Co.....	38	Kuhlman Car Co.....	47	<table border="0" style="width: 100%;"> <tr><td style="text-align: right;">Page</td><td></td></tr> <tr><td>Lang Body Co., The.....</td><td>41</td></tr> <tr><td>LeCarbone Co.....</td><td>38</td></tr> <tr><td>Lorain Steel Co.....</td><td>40</td></tr> </table> <table border="0" style="width: 100%;"> <tr><td style="text-align: center;">M</td><td></td></tr> <tr><td>McClellan & Junkersfeld.....</td><td>22</td></tr> <tr><td>McGraw-Hill Book Co.....</td><td>36</td></tr> <tr><td>Metal & Thermit Corp.....</td><td>45</td></tr> <tr><td>More-Jones Brass & Metal Co.....</td><td>38</td></tr> <tr><td>Morton Mfg. Co.....</td><td>23</td></tr> </table> <table border="0" style="width: 100%;"> <tr><td style="text-align: center;">N</td><td></td></tr> <tr><td>Nachod and U. S. Signal Co.....</td><td>45</td></tr> <tr><td>National Brake Co.....</td><td>21</td></tr> <tr><td>National Pneumatic Co., Inc.....</td><td>13</td></tr> <tr><td>National Ry. Appliance Co.....</td><td>40</td></tr> <tr><td>Nangle Pole & Tie Co.....</td><td>45</td></tr> <tr><td>Nuttall Co., R. D.....</td><td>39</td></tr> </table> <table border="0" style="width: 100%;"> <tr><td style="text-align: center;">O</td><td></td></tr> <tr><td>Ohio Brass Co.....</td><td>5</td></tr> <tr><td>Okonite-Callender Cable Company, Inc., The.....</td><td>41</td></tr> <tr><td>Okonite Co., The.....</td><td>41</td></tr> </table> <table border="0" style="width: 100%;"> <tr><td style="text-align: center;">P</td><td></td></tr> <tr><td>Pantasote Co., Inc.....</td><td>30</td></tr> <tr><td>Perey Mfg. Co., Inc.....</td><td>45</td></tr> <tr><td>Phoenix Ice Machine Co.....</td><td>36</td></tr> <tr><td>Positions Wanted and Vacant.....</td><td>41</td></tr> </table> <table border="0" style="width: 100%;"> <tr><td style="text-align: center;">R</td><td></td></tr> <tr><td>Rail Joint Co., The.....</td><td>40</td></tr> <tr><td>Railway Track-work Co.....</td><td>45</td></tr> <tr><td>Railway Utility Co.....</td><td>45</td></tr> <tr><td>Ramapo Ajax Corp.....</td><td>45</td></tr> <tr><td>Richey, Albert.....</td><td>22</td></tr> <tr><td>Roebbling's Sons Co., John A.....</td><td>23</td></tr> </table>	Page		Lang Body Co., The.....	41	LeCarbone Co.....	38	Lorain Steel Co.....	40	M		McClellan & Junkersfeld.....	22	McGraw-Hill Book Co.....	36	Metal & Thermit Corp.....	45	More-Jones Brass & Metal Co.....	38	Morton Mfg. Co.....	23	N		Nachod and U. S. Signal Co.....	45	National Brake Co.....	21	National Pneumatic Co., Inc.....	13	National Ry. Appliance Co.....	40	Nangle Pole & Tie Co.....	45	Nuttall Co., R. D.....	39	O		Ohio Brass Co.....	5	Okonite-Callender Cable Company, Inc., The.....	41	Okonite Co., The.....	41	P		Pantasote Co., Inc.....	30	Perey Mfg. Co., Inc.....	45	Phoenix Ice Machine Co.....	36	Positions Wanted and Vacant.....	41	R		Rail Joint Co., The.....	40	Railway Track-work Co.....	45	Railway Utility Co.....	45	Ramapo Ajax Corp.....	45	Richey, Albert.....	22	Roebbling's Sons Co., John A.....	23	<table border="0" style="width: 100%;"> <tr><td style="text-align: right;">Page</td><td></td></tr> <tr><td>St. Louis Car Co.....</td><td>17</td></tr> <tr><td>Safety Car Devices Co.....</td><td>8</td></tr> <tr><td>Samson Cordage Works.....</td><td>45</td></tr> <tr><td>Sandersen & Porter.....</td><td>22</td></tr> <tr><td>Searchlight Section.....</td><td>41</td></tr> <tr><td>Shuler Axle Co.....</td><td>23</td></tr> <tr><td>Silver Lake Co.....</td><td>41</td></tr> <tr><td>Smith Heater Co., Peter.....</td><td>45</td></tr> <tr><td>Star Brass Works.....</td><td>43</td></tr> <tr><td>Stevens & Wood, Inc.....</td><td>22</td></tr> <tr><td>Stone & Webster.....</td><td>22</td></tr> <tr><td>Stueckl Co., A.....</td><td>45</td></tr> </table> <table border="0" style="width: 100%;"> <tr><td style="text-align: center;">U</td><td></td></tr> <tr><td>Una Welding & Bonding Co.....</td><td>45</td></tr> <tr><td>United Alloy Steel Corp.....</td><td>32</td></tr> <tr><td>Universal Lubricating Co.....</td><td>43</td></tr> <tr><td>United States Rubber Co., Front Cover</td><td></td></tr> </table> <table border="0" style="width: 100%;"> <tr><td style="text-align: center;">W</td><td></td></tr> <tr><td>"Want" Ads.....</td><td>41</td></tr> <tr><td>Wason Mfg. Co.....</td><td>47</td></tr> <tr><td>Westinghouse Elec. & Mfg. Co. 2</td><td></td></tr> <tr><td>Westinghouse Traction Brake Co. 6</td><td></td></tr> <tr><td>Wharton, Jr. & Co., Inc., Wm. 40</td><td></td></tr> <tr><td>"What and Where to Buy" 42, 44, 46</td><td></td></tr> <tr><td>White Eng. Corp., The J. G.....</td><td>22</td></tr> <tr><td>Wish Service, The P. Edw.....</td><td>23</td></tr> <tr><td>Wood Co., Chas. N.....</td><td>43</td></tr> </table>	Page		St. Louis Car Co.....	17	Safety Car Devices Co.....	8	Samson Cordage Works.....	45	Sandersen & Porter.....	22	Searchlight Section.....	41	Shuler Axle Co.....	23	Silver Lake Co.....	41	Smith Heater Co., Peter.....	45	Star Brass Works.....	43	Stevens & Wood, Inc.....	22	Stone & Webster.....	22	Stueckl Co., A.....	45	U		Una Welding & Bonding Co.....	45	United Alloy Steel Corp.....	32	Universal Lubricating Co.....	43	United States Rubber Co., Front Cover		W		"Want" Ads.....	41	Wason Mfg. Co.....	47	Westinghouse Elec. & Mfg. Co. 2		Westinghouse Traction Brake Co. 6		Wharton, Jr. & Co., Inc., Wm. 40		"What and Where to Buy" 42, 44, 46		White Eng. Corp., The J. G.....	22	Wish Service, The P. Edw.....	23	Wood Co., Chas. N.....	43
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Stone & Webster.....	22																																																																																																																																																																																																												
Stueckl Co., A.....	45																																																																																																																																																																																																												
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Una Welding & Bonding Co.....	45																																																																																																																																																																																																												
United Alloy Steel Corp.....	32																																																																																																																																																																																																												
Universal Lubricating Co.....	43																																																																																																																																																																																																												
United States Rubber Co., Front Cover																																																																																																																																																																																																													
W																																																																																																																																																																																																													
"Want" Ads.....	41																																																																																																																																																																																																												
Wason Mfg. Co.....	47																																																																																																																																																																																																												
Westinghouse Elec. & Mfg. Co. 2																																																																																																																																																																																																													
Westinghouse Traction Brake Co. 6																																																																																																																																																																																																													
Wharton, Jr. & Co., Inc., Wm. 40																																																																																																																																																																																																													
"What and Where to Buy" 42, 44, 46																																																																																																																																																																																																													
White Eng. Corp., The J. G.....	22																																																																																																																																																																																																												
Wish Service, The P. Edw.....	23																																																																																																																																																																																																												
Wood Co., Chas. N.....	43																																																																																																																																																																																																												

WHAT AND WHERE TO BUY

(Continued from page 44)

<p>Ventilators, Car Brill Co., The J. G. Consolidated Car Heating Co. Nat'l. Ry. Appliance Co. St. Louis Car Co. Railway Utility Co.</p> <p>Vestibule Linings Haskelite Mfg. Corp.</p> <p>Weatherproofing Morton Mfg. Co.</p> <p>Welded Rail Joints Electric Railway Improvement Co. Metal & Thermit Corp. Ohio Brass Co. Railway Trackwork Co. Una Welding & Bonding Co.</p>	<p>Welders, Portable Electric Electric Railway Improvement Co. Ohio Brass Co. Railway Trackwork Co. Una Welding & Bonding Co. Westinghouse E. & M. Co.</p> <p>Welders, Rail Joint Ohio Brass Co. Railway Trackwork Co.</p> <p>Welding Processes and Apparatus Electric Railway Improvement Co. General Electric Co. Metal & Thermit Corp. Nat'l Ry. Appliance Co. Ohio Brass Co. Railway Trackwork Co. Una Welding & Bonding Co. Westinghouse E. & M. Co.</p>	<p>Welding and Cutting Tools International Oxygen Co. Welding Steel Electric Railway Improvement Co. Railway Trackwork Co. Una Welding & Bonding Co.</p> <p>Welding Wire American Steel & Wire Co. General Electric Co. Railway Trackwork Co. Roebbling's Sons Co., J. A.</p> <p>Welding Wire and Rods Railway Trackwork Co. Wheel Guards (See Fenders and Wheel Guards) Wheel Presses (See Machine Tools)</p> <p>Wheels, Car, Cast Iron Bemis Car Truck Co. Griffin Wheel Co.</p>	<p>Wheels, Car, Steel & Steel Tire American Steel Foundries Carnegie Steel Co. Wheels, Steel Discs Budd Wheel Co.</p> <p>Wheels, Trolley Elec. Ry. Equipment Co. Elec. Service Supplies Co. General Electric Co. More-Jones Brass & Metal Co. Nuttall Co., R. D. Star Brass Works</p> <p>Wheels, Wrought Steel Carnegie Steel Co. Whistles, Air General Electric Co. Ohio Brass Co. Westinghouse E. & M. Co. Westinghouse Traction Brake Co.</p>	<p>Window Sash, Locks and Racks Morton Mfg. Co.</p> <p>Wire Rope American Steel & Wire Co. Roebbling's Sons Co., J. A.</p> <p>Wires and Cables American Brass Co. American Electrical Works American Steel & Wire Co. Anaconda Copper Min. Co. General Electric Co. Kerite Insulated Wire & Cable Co. Okonite Co. Okonite-Callender Cable Co., Inc. Roebbling's Sons Co., J. A. Westinghouse E. & M. Co.</p>
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Our advertisement in the issue of August 21 showed how
HASKELITE and PLYMETL
 are being used in reconstructed cars.

Another ad will appear next week.

HASKELITE MANUFACTURING CORPORATION
 133 W. Washington St., Chicago, Ill.

Hale and Kilburn SEATS

Better Quality Seats
For Cars and Buses

Hale-Kilburn Co.
1800 Lehigh Ave., Philadelphia, Pa.



Operating Costs OLD CARS		Operating Costs NEW CARS	
	Per Car Mile		Per Car Mile
Way and Structures...	6.68c.	Way and Structures...	5.72c.
Maintenance	2.05c.	Maintenance .....	.88c.
Power	5.83c.	Power	5.65c.
Conducting Transp.....	10.29c.	Conducting Transp.....	7.11c.
General Miscel.....	6.45c.	General Miscel.....	5.38c.
TOTAL	31.30c.	TOTAL	24.74c.
		Annual Saving	\$24,808.81
		Investment	\$80,000.00
		Gross Return	30.1%

NEW CARS—

The Turning Point

Evansville & Ohio Valley Railway shows economies in service with new cars aggregating a gross return of 30.1 per cent.

When the Evansville & Ohio Valley Railway displaced obsolete equipment, weighing 66,000 lb., with modern cars weighing only 34,000 lb. it was "the turning point." Not only have the result-

ant economies been very satisfactory, but the improved service, increased schedule speed due to faster acceleration of the lighter and more modern equipment, is also an important factor.



Passenger comfort—like that offered by the luxurious motor bus—like that provided by the private automobile—this is one basis for the establishment of an electric railway's earning capacity against present-day competition.

A car that attracts is a car that earns

With this truth firmly in mind, the Grand Rapids Railway has pioneered improvements in car design as a measure fundamental to increasing its earning power.

Steps that afford easy and rapid passenger movement; seats with comfortable, individual cushions; pleasing lights; improved springs, brakes, bearings, and other construction; and G-E equipment—these are factors that have made the Grand Rapids cars a successful innovation in attractive, light-weight, economical rolling stock.



Innovations in electric railway rolling stock are almost invariably linked with G-E modern car equipment, which is obtainable for any service, in any capacity.

More than a year of operation has demonstrated the money-saving advantage of these modern cars and has verified the public's preference for improved design. The 27 new Grand Rapids cars which were recently placed in operation are all equipped with G-E Motors, Control, and Air Compressors.

GENERAL ELECTRIC

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