

ELECTRIC RAILWAY JOURNAL



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UNITED STATES

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Motorcoach

MADE BY THE UNITED STATES RUBBER COMPANY





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TIME has not lessened the importance of that day last June, when the Chicago Rapid Transit Company and the Chicago, North Shore and Milwaukee Railroad carried a quarter million Eucharistic pilgrims to Mundelein and return, in addition to regular traffic, and without a single accident. The transportation and care of this vast army stands as an achievement without parallel in public service. In sheer magnitude, it is a feat of transportation that

almost defies imagination. President Budd and his loyal and capable co-workers have brought honor, not alone to themselves, but to the entire industry. Their accomplishment demonstrates not only the capacity, but the will of the electric railways as a whole to serve the masses. Nearly a million pilgrims, from every corner of the land, carried back home a message of good-will that must benefit the entire railway industry.

Practically all of the cars of the Chicago Rapid Transit Company and the Chicago, North Shore and Milwaukee Railroad are Westinghouse equipped.

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East Pittsburgh Pennsylvania
Sales Offices in All Principal Cities of
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1926

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Vol. 68
No. 14

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A Convention On Your Desk

DURING the coming week the greatest convention of local transportation men of all time is being staged at Cleveland. Thousands of delegates from all over this country and from foreign lands will be in attendance. Hundreds of thousands of dollars are being spent by manufacturers to exhibit new apparatus designed to improve performance and reduce operating costs. There will be the largest exhibit of street cars ever made. In short, it is only in superlatives that this convention can be characterized.

With the close of the convention Friday night ELECTRIC RAILWAY JOURNAL goes to press. If you are one of the stay-at-homes who kept the wheels turning, the JOURNAL will bring you a full report of this eventful meeting. If you are fortunate enough to attend, on your return you will find a complete review, reports of meetings you could not attend summarized and interpreted for your convenience.

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Successful Methods

Journal of Electricity

(Published in San Francisco)

American Machinist—European Edition

(Published in London)



1926

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Can your cars "hold their own"?

City streets have become so crowded that there is constant competition between the various elements of traffic for the right of way.

If street cars are to meet this condition and hold their own in the general traffic movement they must be as mobile as other conveyances that use the streets:

An effective means of increasing car mobility is to provide brakes that will permit short stops, and the consequent longer period of peak speed operation and shorter running time between stops. With ordinary brakes, however, the retarding force which is satisfactory for the empty car is less effective when the car is loaded, so that the stopping distance lengthens, and this usually happens just when other vehicles are also contending for the right of way.

The Westinghouse Variable Load Brake was designed to correct this condition. It automatically adjusts the retarding force as the weight varies, so that the stopping distance is constant throughout the range of car loading. This results in accelerated transportation service just when the greatest possible hauling capacity is needed most.

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

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General Offices and Works: Wilmerding, Pa.



Ideal Section of Chicago, South Shore and South Bend Railroad

40 Miles of O-B Catenary Materials in South Shore Line Rehabilitation



The new O-B General Catalog No. 20 contains much information on modern catenary construction. It includes data of value to every inter-urban operating official. Have your copy?

TO GIVE permanency to its 40 miles of new catenary construction, recently erected as part of an extensive rehabilitation program, and to insure maximum freedom from service interruptions in operating its fast interurban trains, the Chicago, South Shore and South Bend Railroad specified modern O-B Catenary Materials throughout.

The new Catenary Overhead extends from Miller, Ind. to Kensington, Ill. It is of the combined contact and feeder system type and replaces in part an old O-B Catenary System that had been in service for nearly 20 years.

The use of O-B Catenary Materials makes possible a flexible contact wire, free from "hard spots," and combines good current collection with maximum economy of maintenance. If you are interested in the advantages of catenary overhead, O-B is at your service.

Ohio Brass Company, Mansfield, O.
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 Niagara Falls, Canada

184 B

Ohio Brass Co.



PORCELAIN
 INSULATORS
 LINE MATERIALS
 RAIL BONDS
 CAR EQUIPMENT
 MINING
 MATERIALS
 VALVES

Safeguard and Accelerate Traffic

Automatic Signals by providing proper spacing of cars or trains, reduce trip time and enable more cars to be operated with consequent safety.

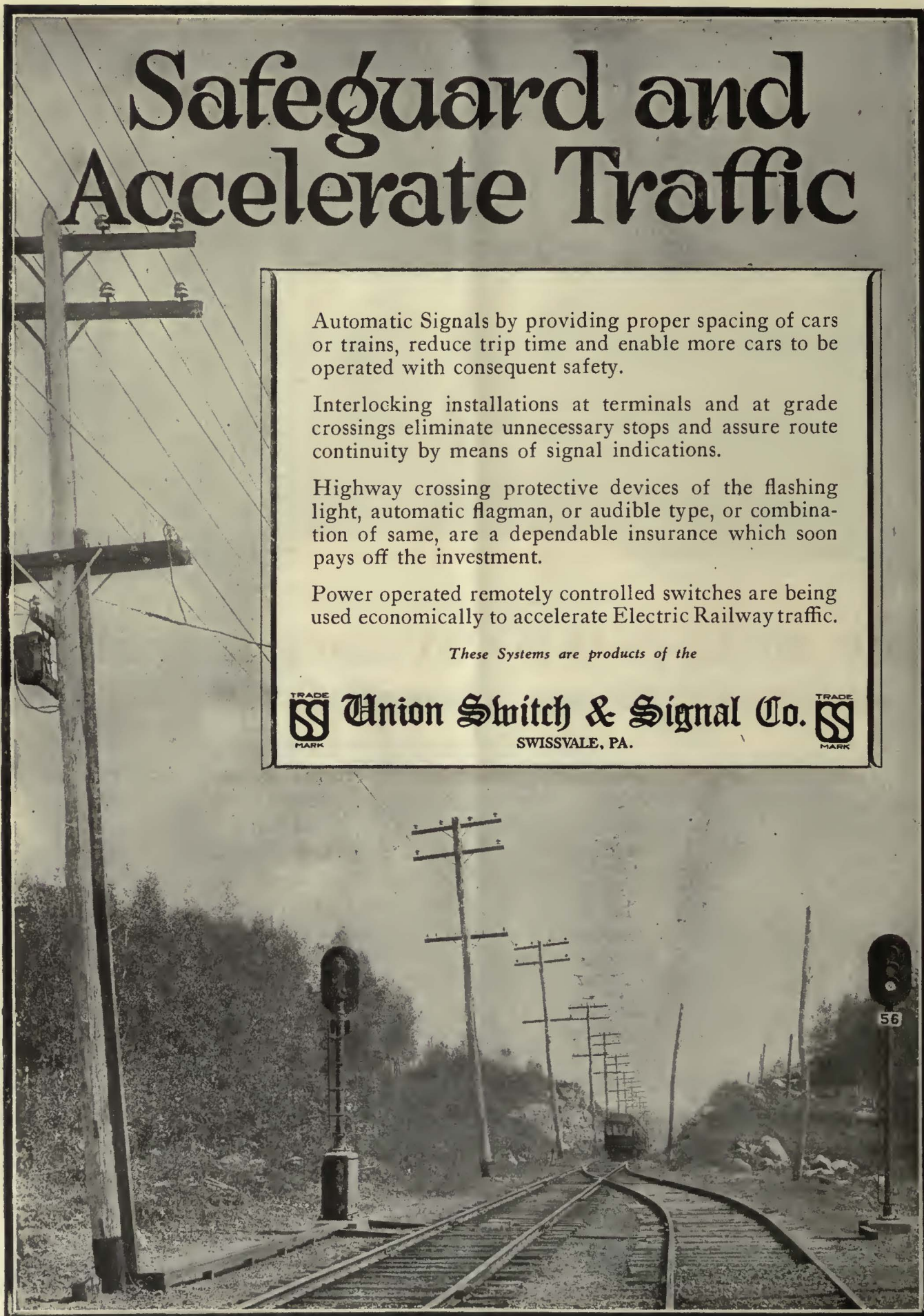
Interlocking installations at terminals and at grade crossings eliminate unnecessary stops and assure route continuity by means of signal indications.

Highway crossing protective devices of the flashing light, automatic flagman, or audible type, or combination of same, are a dependable insurance which soon pays off the investment.

Power operated remotely controlled switches are being used economically to accelerate Electric Railway traffic.

These Systems are products of the

Union Switch & Signal Co.
SWISSVALE, PA.





The Question:
TREATED OR UNTREATED TIES?
 The Answer:
NEITHER—STEEL TWIN TIES!

For the following reasons:

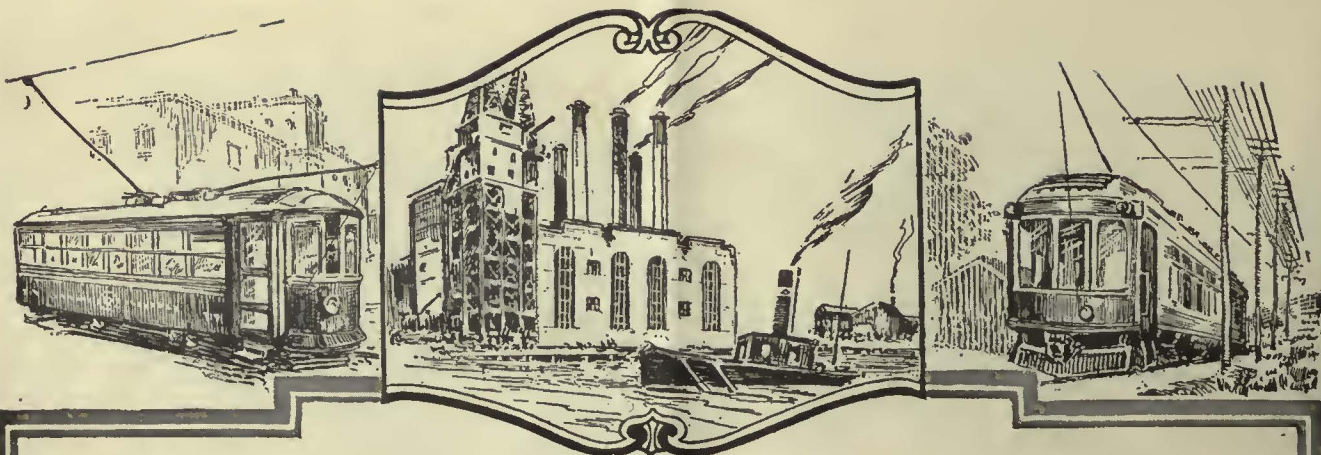
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May we send you literature and cost figures proving the above?

The International Steel Tie Company, Cleveland, Ohio

Steel Twin Tie Track

Renewable Track . . . Permanent Foundation



OCTOBER— an Important month to Lubricating Engineers

—and this is why:—

Each year, at this time, Electric Street Railways have to meet certain operating conditions which have a seasonable phase.

Being in the Oil business, *we'll stick to that end of it.*

That is why we impress upon you that now is the time to begin changing your lubricants to meet weather conditions.

There is good reason for this:

All oils tend to become a little thicker, a little sluggish, in colder weather.

The viscosity (fluidity or body) of all oils varies with temperature. In the application of lubricants to street cars it is the operating temperature that counts. As the weather gets colder, the oils you used all summer will thicken. They will not feed as freely. You can't change the temperature, but you can *change the oils to compensate.*

But weather doesn't change at a given date, so here's what we recommend:

Compensate gradually. Begin now (about the middle of October) adding steadily small

quantities of lighter oils to the lubricants now on the cars. This will gradually lower the viscosity, keeping it normal all the time as winter comes.

Begin now, changing over to

TEXACO WINTER ELECTRIC CAR OIL
TEXACO WINTER AIR COMPRESSOR OIL
TEXACO WINTER GEAR LUBRICANT

Then all the time, even in the middle of winter, you will be fully protected by these carefully refined lubricants.*

We have worked out an interesting and economical technique on roads all over the country and shall consider it a privilege to have our TEXACO Lubrication Engineers discuss it with you in person.

As our stations are already stocked with the Winter Lubricants, we are amply prepared to handle your order for them now.

And remember, there is a TEXACO Lubricant for every purpose; for rolling stock or power plant—everywhere along the line.

* In spring, reverse the Process, gradually raising the initial viscosity of the lubricants so that, under the heat of summer, the oils will "fall back" to their original fluidity.



THE TEXAS COMPANY
DEPT. R-J · 17 BATTERY PLACE · NEW YORK CITY
HOUSTON · CHICAGO · NEW YORK
OFFICES IN PRINCIPAL CITIES



Advertise— those new cars!



Use clear, clean, readable Hunter-Keystone Signs to "Tell the public where you're going" on the thousands of new cars demanded by the industry's modernization program.

Ask for details

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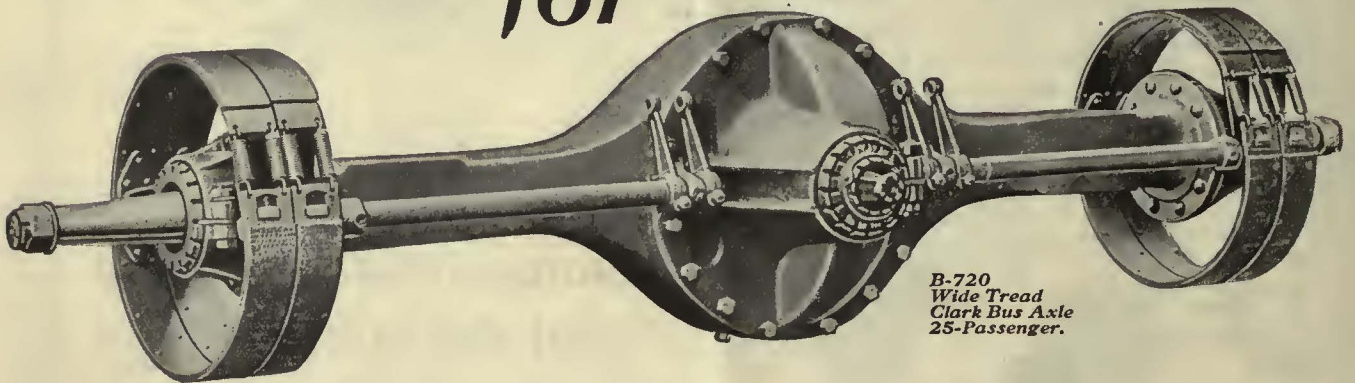
Lyman Tube & Supply Co., Ltd., Montreal, Toronto, Vancouver

HUNTER-KEYSTONE SIGNS



CLARK AXLES

for



B-720
Wide Tread
Clark Bus Axle
25-Passenger.

MOTOR BUSES

High speed with greatest efficiency is possible for heavy duty buses built with Clark spiral bevel drive axles—*single reduction*.

Buses up to 25-passenger capacity may be handled with safety when built with Clark wide tread axles.

These axles possess the following essential and distinctive features: straddle mounted pinions with load carried between two annular ball bearings; dual wheel bearings, adding security and service; double compensating internal brakes providing maximum safety with ease of replacement; cast steel, high carbon, air-cooled brake drums; electric steel main axle housing—specially heat treated.

*Exhibiting at
American Electric Railway
Association,
Cleveland, Ohio,
October 4-8, 1926.
Space No. 429.*

CLARK EQUIPMENT COMPANY
BUCHANAN, MICH.

Member Motor Truck Industries, Inc.



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—and practically the only
contact with your patrons

— is the DOOR through which they pass

A NICE piece of mechanism is required to control these doors in such a way that they will build your patrons good will rather than occasion their continual annoyance. The National Pneumatic Company has specialized in the building and perfection of such apparatus ever since adoption of the first closed-platform cars.

NATIONAL PNEUMATIC COMPANY

Executive Office, 50 Church Street, New York

General Works, Rahway, New Jersey

CHICAGO
518 McCormick Building

MANUFACTURED IN
TORONTO, CANADA, BY

Railway & Power Engineering Corp., Ltd.

PHILADELPHIA
1010 Colonial Trust Building

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



Everything a 6 should have *plus* Mack reputation

Mack Trucks Inc.

International Motor Company
25 Broadway New York City





McGraw-Hill
Building,
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Chemical and Metallurgical Engineering provides dependable statistical information for the process industries. Its weighted price index is used as an authority in Secretary Hoover's "Monthly Survey of Current Business"—in the bulletins issued by large metropolitan banks—and in leading newspapers. Manufacturers and consumers of industrial chemicals use it as a guide in charting production and consumption facts and trends. Equipment manufacturers gauge conditions by it.

Engineering and Mining Journal is the publication through which come facts and figures of vital importance to the stabilization and stimulation

of the metallic and non-metallic mining industry. Its market quotations are accepted as a basis for computing contracts in the industry. And its practical information on methods and machinery for eliminating waste and increasing efficiency and profits are welcomed by its subscribers.

Electrical World was the first to collect data on the operations and the development programs of the electrical industry, and has continued to present these statistics week after week, charting in detail, thereby, the progress of this great servant industry. It also publishes each month a national and sectional barometer of activity in each of the primary manufacturing industries. This barometer is based upon reports of electrical energy consumption received monthly from almost 2,000 large manufacturing plants which consume approximately eight-billion kw.-hrs. per annum. This barometer is accepted by economists as the most timely, diversified and sensitive indicator of industrial activity available.

Engineering News-Record's construction cost and construction volume index numbers are the authoritative gauges in the field of industrial and engineering construction. Its compilation of value of contracts awarded the country over in the various classes of construction (a monthly service for 14 years) gives the engineer, contractor, manufacturer of equipment and the material dealer an accurate running account of the financial value of the business from which they derive their living.

Approximately 15,000 sources are regularly consulted by McGraw-Hill editors, marketing counselors and statisticians in keeping McGraw-Hill data on industry and electrical and radio trade accurate and up to date.

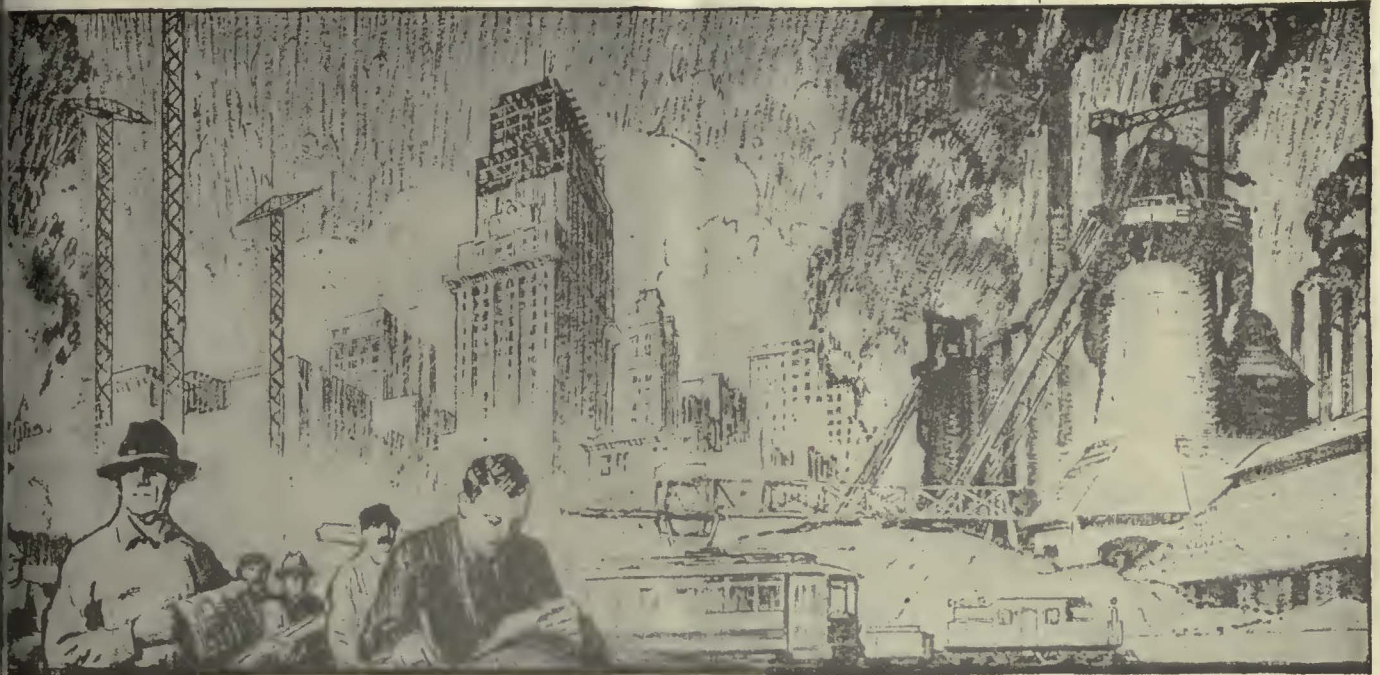
In addition 220,000 McGraw-Hill subscribers constitute a source that is consulted from time to time for

specific data relating to production and buying

41 McGraw-Hill men devote their time exclusively to collating and interpreting data for editorial presentation to McGraw-Hill subscribers and for the information of industrial advertisers.

More than 200,000 vital question-

naires are dispatched yearly from McGraw-Hill offices, many of them going to the same sources week after week and month after month in order that McGraw-Hill reports may be up to the minute. These data are published regularly in the McGraw-Hill Publications and are quoted from them regularly in 134 leading newspapers published in industrial centers.



Industry's Data Center

And so with all other McGraw-Hill Publications. Industry's dependence upon them is the logical outcome of centralizing the collective resources of the McGraw-Hill Publishing Company in obtaining information and disseminating it scientifically. It is from this storehouse of industrial data and the experience in acquiring the facts that has come the ratings of industrial markets and the formula for selling them efficiently. This knowledge is epitomized in the following McGraw-Hill Four Principles of Industrial Marketing:

MARKET DETERMINATION—An analysis of markets or related buying groups to determine the potential of each. With a dependable appraisal of each market, selling effort can be directed according to each market's importance.

BUYING HABITS—A study of the selected market groups to determine which men in each industry are the controlling buying factors and what policies regulate their buying. Definite knowledge eliminates costly waste in sales effort.

CHANNELS OF APPROACH—The authoritative publications through which industries keep in touch with developments are the logical channels through which to approach the buyer. In a balanced program of sales promotion these publications should be used effectively and their use supplemented by a manufacturer's own literature and exhibits.

APPEALS THAT INFLUENCE—Determining the appeals that will present the product to the prospective buyer in terms of his own self-interest or needs.

The application of these Four Principles of Industrial Marketing to your business must result in greater efficiency and lowered selling cost.

A request, either from you or your advertising agent, for a personal consultation entails no obligation.

McGraw-Hill marketing counselors are at your service, ready to show you how you can effectively use Industry's Data Center.

McGraw-Hill Publishing Company, Inc., New York, Chicago, Philadelphia, Cleveland, St. Louis, San Francisco, London

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45,000 Advertising Pages used Annually by 3,000 manufacturers to help Industry buy more effectively.

CONSTRUCTION & CIVIL ENGINEERING
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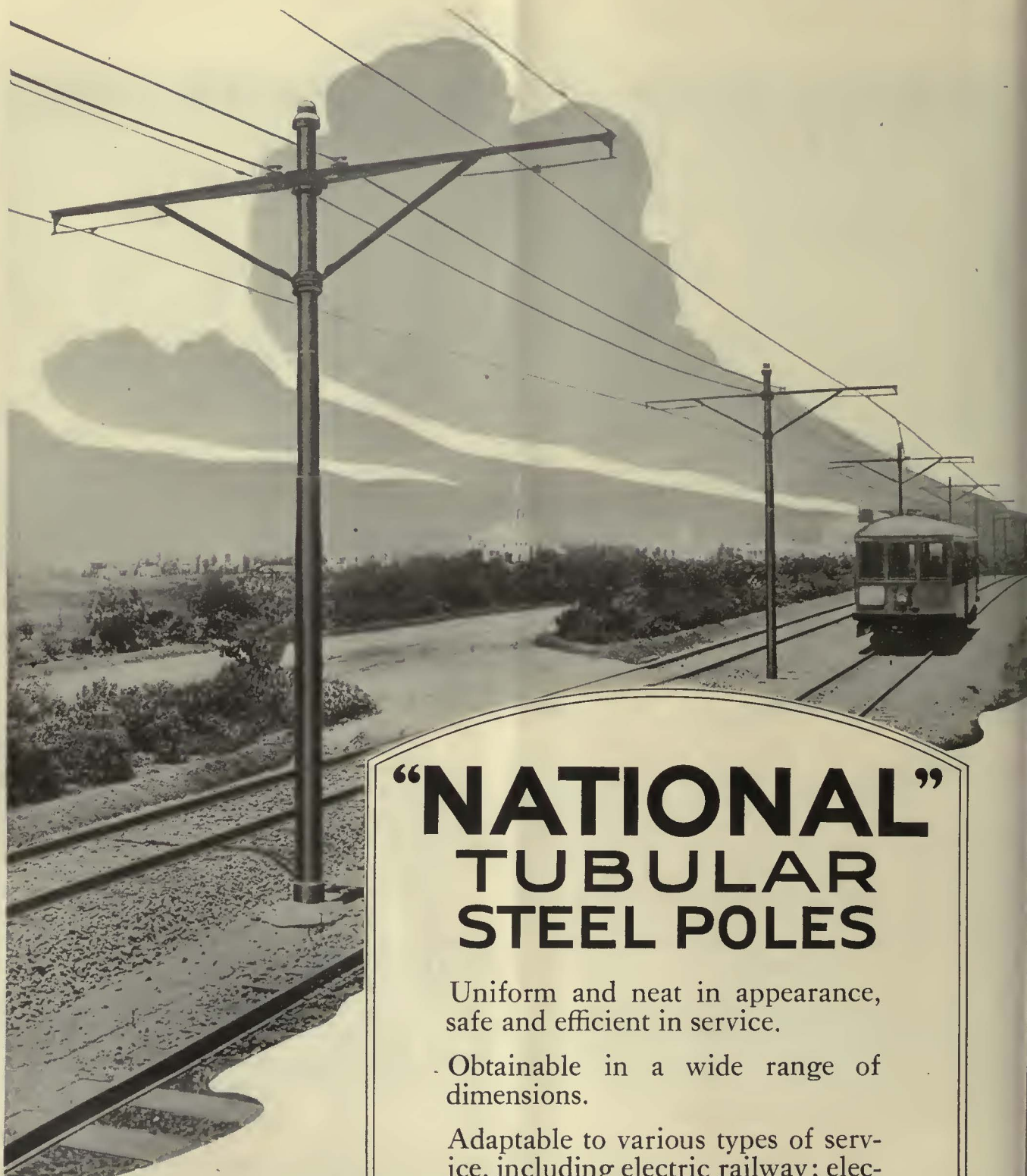
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 MINING, QUARRYING AND CEMENT INDUSTRIES



“NATIONAL” TUBULAR STEEL POLES

Uniform and neat in appearance,
safe and efficient in service.

Obtainable in a wide range of
dimensions.

Adaptable to various types of serv-
ice, including electric railway; elec-
tric transmission; signal; telephone,
telegraph and street lighting.

Our engineers will be glad to assist in selecting
the right pole for any particular installation.

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Ask for a Copy of Bulletin
No. 14 — “NATIONAL”
TUBULAR STEEL POLES

BALANCED DESIGN

*has made it decidedly EASIER
to buy New Cars!!*

NEVER before in the history of the industry has car design been so vital a matter, and so complex a subject for consideration, as it is today.

Not only must there be a decisive break with precedent, but the results of this break must be positive—for few railway companies can afford to spend money on experiments.

Hence, it is only natural that many of the properties, which need modernization most, are still holding back, feeling that their own efforts in the design of modern equipment might entail experimental work which they could ill afford.

Is it really necessary, however, for an electric railway to design its own cars? We believe not. And on a basis of this belief we

have formulated a new principle of car building—tending, however, to desirable uniformity of *performance* rather than standardization. This is the principle of “BALANCED DESIGN” with both origination of plans and actual construction under one experienced supervision. It provides for a pooling of *all* the best in advanced practice. It has resulted in a series of cars so strikingly different, and so thoroughly practical, as to meet with instant approval.

And these cars in operation on many properties have *without exception* resulted in profitable and healthily growing business.

Certainly it is easier to visualize your new car plans this way. *You make no experiments.* The formula is fixed. The results are certain.

THE CINCINNATI CAR COMPANY
CINCINNATI, OHIO

CINCINNATI
New
CARS



A step ahead of the modern trend



Your Maintenance-of-Way Department needs G-E Resistor Arc Welders

Some built-in Features of Type AW Resistors

- weigh only 150 lbs.
- are easily portable
- voltage range 400 to 650
- 200 or 300 amp. sizes
- 65 to 330 amp. current steps
- made of special resistance wire
- well insulated and ventilated
- withstand heavy service and weather conditions



Every loose joint and worn rail in your tracks is losing money for you. Every loose joint represents a current leak and voltage drop—every worn rail a source of damage to equipment.

Keep your tracks in sound condition with G-E Resistor Arc Welders. They are strong, light-weight, compact units, especially designed for welding rail bonds and building up low spots on rails.

Deliveries on these welders are prompt; service is excellent; they cost little to operate and maintain. You can have a complete supply for your maintenance-of-way department at a surprisingly low cost. Complete information at your nearest G-E office.

GENERAL ELECTRIC

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

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, October 2, 1926

Number 14

Wider Recognition of Need for Parking Regulation

WITH admirable clarity the *American City Magazine*, in its October issue, suggests in a few brief words where we must look for a solution of the parking problem in our congested streets. "The right to move a car is superior to the right to store a car on the public ways." This is the outstanding statement in a set of principles formulated by that paper in behalf of rational city planning and sound municipal finance. A summary of these principles is given elsewhere in this issue.

Gratification will be felt by all transportation men that other influential agencies are thus aiding the fight for relief of congestion by means of parking restriction. Too often it has been left entirely to the local railway management to study the problem of congestion and suggest ways to improve the situation. No matter how fair the proposed solution might be, it usually fell under suspicion because it came from a so-called "interested party." Now, however, other agencies with no axes of their own to grind are coming to see the necessity for better regulation. In the final analysis, every citizen is an interested party, and the relief of congestion will be of benefit to all.

Taxation Relief Holds a Prominent Position Today

STUDENTS of economics have been giving much thought to the general subject of taxation, and have focused particular attention on methods that are applied to the regulated utility. For years innumerable the *ad valorem* principle has been the basic one on which most taxes were levied. Ability to pay has received but scant attention. This is not surprising when it is realized that the *ad valorem* method is not necessarily unjust in case the tax is uniform for all similar industries, and when it readily can be passed on to the ultimate user. Herein lies the difficulty in applying this principle to the electric railways. In this class of industry there are restrictions, known to all operators, that effectively limit the ability to pass on increasing costs by charging higher fares.

Recognizing this feature, tax economists have recently advanced a principle of taxation based partly on the gross revenue and partly on the net revenue. Leslie Vickers, in the article on the gross-net tax in this issue, likens this principle to that of rent. The use of facilities operated under the franchise that the state grants has a value based only on the ability of the industry to earn a profit. If the industry cannot earn a profit then it likewise cannot consistently be expected to pay more than a nominal tax. This principle is so fundamental that it should meet with whole-hearted support on the part of railway officials. One difficulty is that the electric railways may have to fight the battle single-handed,

as this form of taxation is of primary value to them. Realizing this, a nation-wide effort to foster measures for taxation relief is being started by the American Electric Railway Association.

There is perhaps no greater or more important opportunity before the industry to-day to gain relief from crushing burdens than through creation of a sound and fundamental tax basis. It is to be hoped that through the effort of the association definite progress can be made during the year, and that at the next convention there will be at least one state which has recognized the gross-net tax in principle and applied it to the utilities under its jurisdiction.

Any utility regulated as to earnings is primarily a tax collector for the state. The tax thus collected should not place the utility in a position of jeopardy, as regards its ability to produce a thoroughly satisfactory service at a living wage.

A Noble Lord Is Taken to Task

ENGLAND, too, has its electric railway detractors—no less virulent than those in the United States—detractors who pretend to see the passing of the electric railway. According to the *Electric Railway and Tramway Journal* of London a noble member in the House of Lords recently informed such of his colleagues in that august assembly as were present that "all progressive communities are suppressing the tramways." Of course that paper might be expected to know about any such development, but this startling statement came to it as news, just as similar statements have come to ELECTRIC RAILWAY JOURNAL on occasion. As it is that paper's obvious mission, just as it is that of ELECTRIC RAILWAY JOURNAL, to be keen and avid in its search for railway news, it lost no time in looking into the matter, lest movements of moment should be fructifying while it was under the influence of widely different impressions.

As a result of its search that paper not only failed to find any railway scrappings, but really found in many directions extensions of and additions to the pre-existing tramways. It says that this will doubtless be deemed sheer perversity by the noble lord and those of his fellow peers who take similar views. Still it ventures to draw the inference that the authorities who are thus adding to the mileage of their tramways know what they are doing and why they are doing it, whereas the noble lord and his friends have no actual knowledge of the traffic problem as a whole, of its complexities, or of requirements of the people who are neither peers nor the owners of motor cars. On the other hand, it charges them with considering themselves and their cars only, and with pooh-poohing the serious statements of highly experienced men like Sir Sam Fay, Sir Henry Maybury, and others, who categorically assert that tramways are absolutely necessary and that they

cannot be adequately replaced by other means of transportation.

In its protest against the wild and inexact statements which are made so frequently by the enemies of tramways our English contemporary does not suppose for one moment that it will convince them of their errors. In this it is correct. That the paper, as a result of its inquiry, sees no reason to change its opinion will not affect the noble lord any more than would disproof offered in the United States with the idea of suppressing similar silly statements, made for that matter no less regally or lordly. As another contemporary said recently in comment akin to this, it is well to remember that logic would cramp the style of the man and the noble lord, too, who is given to talking through his hat.

Special Libraries

Can Help Plan for the Future

KNOWLEDGE of any business, both in general and in all its details, is essential to success. Research workers are striving constantly to discover new methods, new materials, that will lead to better results in industry. They are telling the story of their accomplishments month by month and week by week in the technical and scientific press. Unfortunately, a great deal of valuable work is lost to industry through failure of others to find the published reports. Studies are made over and over, experimental researches are prolonged, and even inventions are duplicated on account of lack of access to the original publications or failure to locate the articles.

Writing in a recent issue of *Special Libraries*, C. A. Capper, director of research of the Los Angeles Railway, emphasizes the importance of reviewing the development of this industry. Quoting Jacques Loeb, "a new discovery is a combination of old ideas, and these combinations are most likely to occur to the mind of the scientist, not when he is handling material things but when he is brooding over the thoughts of other men and rethinking them himself."

Mr. Capper traces the history of transportation back to the year 1661 to find the prototype of the street car, and indicates the value of the special library in making it possible to show the tremendous changes made since that time. From this he argues that leaders in the electric railway industry should conduct researches to determine the social implications involved in the service they render. Here is a real field for the special library, and one that alone can justify its establishment.

Public Transportation— Builder of Realty Values

PUBLIC transportation has long been recognized as a builder of realty values. Placing a definite figure on the worth of the service in this connection is far more difficult. As a result, the average railway man has been content with making a general statement that a certain section has been built up through the agency of his system and let the statement be accepted for what it is worth.

Perhaps the most extensive survey ever made is that recently completed by the People's Motorbus Company of St. Louis. Prompted by increasing taxation, that company set out to show that its services had increased the taxable values of districts that had not been reached by public transportation prior to the inauguration of

its services. An exhaustive research was made from public and private records assisted by specialists in the field of realty values. All the statements made were taken from official records or other authentic sources. As a result of the survey it was shown that realty values in the territory served have increased more than \$36,000,000 in three years. This remarkable result was backed up by detail figures, along with photographs and maps showing the condition of the various sections before and after the development.

What is of even more value from the utility standpoint was the statement that this increase in realty values has brought to the city of St. Louis new tax revenue equivalent to more than \$557,280 a year. That evidence should make it hard for even a hostile city administration to continue strangling the transportation line. Be it railway or competing bus operator, it is difficult to see the justification in levying taxes that make it impossible to give service that will attract residents to new territory, building up the city and making it a more valuable entity.

It is somewhat unfortunate that comparative figures were not given showing the values of real estate where public transportation was not furnished over the same period. That would set to rest any question as to a general rise in property values, or would give a yardstick in case there had been any material rise.

There is no reason why similar surveys should not be made in other cities where similar questions have been raised. True, it may not be so easy, for in many places the development has taken place over a long period of years. But with patience and persistence it should be possible to show, not in general terms, but specifically, just how much the transportation service has meant to the community.

The Increasing Hazard that Attaches to Street Work

CLAIMS men recently in session at a committee meeting kept getting off the subject that was up for discussion to comment on the hazards that attach to the men employed by their companies for street work. The concern of these men was deep, and well it might be. They were, of course, discussing the question informally, so that it is impossible to quote the figures of injuries and deaths sustained by their employees. These figures were distressing and the recital of actual incidents, not isolated by any means, was gruesome. These men admitted they were about at their wits' end to protect their trackworkers against the reckless automobile driver, many times a man of no means, against whom it is impossible to recover damages. Warning lights are ignored or misinterpreted and actual physical barriers intended to protect the workmen in the streets have been demolished.

Several of the men who were discussing the problem were agreed that conspicuous dress for the worker in the street was, perhaps, more potent as a preventive than were ordinary warning signs or barriers. Others felt that use should be made of both these precautions. Certainly the idea of the distinctive garb or insignia for the street worker is spreading. There is evidence of this on every side. Two notable instances in the news recently are the use of red coats by the track greasers of the Wisconsin Public Service Corporation and the addition of white belts to the raiment of the

street workers of the United Railways & Electric Company in Baltimore. In thus attiring their men the companies are actuated by the same motives that prompted the conception of the White Wing, the creator of which sought for a garb that would differentiate the street cleaner from the pedestrian and accentuate his presence in the street. This was, indeed, an original conception at the time. It is still potent in the degree of protection it affords. No less ingenious and no less potent are the means to which railway men are resorting.

Just as the cities themselves have come to carry on at night more of their activities, such as street cleaning, ash and garbage removal, so the railways are doing more and more street work at night and in off-peak hours. There is, however, an irreducible minimum of this work that must be done when the hazards of the streets are greatest. Naturally there is no lack of a disposition on the part of the companies to afford their men the best possible protection. The problem really appears to be to discover the form or forms of protection likely to be most effectual. Nobody seems definitely to know just what this is. Undoubtedly there isn't any answer, in the mathematical sense of an exact answer, but the more the problem and the means taken to solve it are discussed the more likely is it that the hazard will diminish. As the meeting of the committee to which reference is made plainly shows, the disposition to discuss the matter is there. It is greater opportunity for such discussion that is needed, particularly as the effectiveness of all means of protection is put to a constantly increasing test as traffic increases and the automobile comes more and more into the hands of the reckless, the incompetent and the financially irresponsible.

The Fine Art of Saying Nothing at All

EARLY in the week just ended Mayor Walker of New York said that the "new subways, the independent subways, will be operated not as a losing proposition to the city and at a 5-cent fare." He assured New York that "this subway thing is going to be all right." But he was reticent about explaining, reticent to the extent that "I am not going to confide in you now the how and the why." Naturally this comment provoked an avalanche of speculation as to the how and the why. As the *Brooklyn Times* said, the how and why are very important. Indeed they are, particularly as the Board of Transportation has declared that the cost of carrying a passenger on the new lines will be 8 cents at least, and other authorities have put the cost higher. Moreover, if recollection is correct, legislative enactment provides that the new city-owned and operated subways may be run at a 5-cent fare for an experimental period only, after which they must be operated on a service-at-cost basis.

The Mayor's statement was intended to check penetrating remarks made by Stewart Browne, who "not infrequently nags the metropolitan rulers." Anyway, the comment has seemingly appeased nobody. It was agreed that the Mayor's speech was otherwise delightful, but that his remarks "sounded too much like the old, old applesauce," as one commentator said, seemingly not forgetting the eight years of Hylan rule. But that isn't all. Later in the week the Mayor said: "The town needs a social Mayor and a business Mayor. The social Mayor would do all the social wel-

coming and attend all the dinners and make most of the speeches. The business Mayor would do all the work. Being the social Mayor would be one of the most delightful jobs in the world. Being the business Mayor would be one of the most responsible. But to be both would take a superman."

Still further along in his talk the Mayor said that he had been "criticised for talking foolishness, but it seemed to me that the safest compromise was to master the fine art of saying nothing at all." So far there has been little or no evidence that the Mayor is a superman, but judged on the basis of his remarks before the United Real Estate Board, the conclusion seems inescapable that in Jimmie Walker New York has a Mayor to whom the technique of saying nothing at all has no mysteries.

Electric Railways Are an Important Asset to the Electric Industry

COMPLETE disregard of the electric railway situation on the part of many of the light and power interests is one of the exasperating circumstances that face the transportation manager from time to time. There is a certain community of interest between these two utilities. In fact, they are often held under one ownership. The profits from transportation, however, have not in recent years been as high as the profits from the ever-growing electric power industry.

It is consequently disconcerting to read the recent announcement of the Society for Electrical Development in which campaigns have been planned for 33 electrical fields and to learn that electric railway transportation is not included in the list.

By referring to statistics, it is observed that the light and power industry generates about 65,000,000,000 kw.-hr. a year. To propel the electric cars in the United States it takes 12,500,000,000 kw.-hr., equivalent to nearly 20 per cent of the entire production of the light and power companies. Only about half of this electric railway energy is purchased from light and power companies, the other half being generated in railway power houses. There are thus two prospective markets for the light and power utilities: First, to take over the power supply of companies that are now generating their own, and, second, by helping to increase the use of the electric railways. And yet the Society for Electrical Development, with whatever importance may be attached to its 33 campaigns, ignores the field of the electric railways altogether!

While the electric street vehicle is not generally a competitor of the street railway, it is quite noticeable that two of the 33 campaigns are on delivery trucking and industrial trucking. It will be a long time before electric street vehicles other than the street cars can become as good customers of the light and power utility as the street cars are today. Every new passenger that the street car can get and every new extension of service that results from many new riders are a boost for both the railway and the light and power industry.

It is not so much the loss that might arise by not being included among the list of campaigns to be promoted, but the disregard of the railway industry on the part of another that should be its closest friend is certainly cause for astonishment. Electric railways are generally accepted as a basic necessity, but it is going to take a lot of hard work and hard thinking to make them a profitable necessity.

What Is the Gross-Net Tax?

Undisputed as a Sound Method of Taxing Public Utilities, the Gross-Net Principle Is Yet Unapplied in a Single Case—The Value of a Utility for Taxation Purposes Must Be Based on Its Earning Power—The Principle of Rent Is Applied

By Leslie Vickers

Economist American Electric Railway Association

NEARLY every public utility man feels that the burden of taxation that his company is paying is a heavy one, and if it happens that he is in the street railway business he must face a host of imposts that are peculiar to his business and for the payment of which he has been singled out from other taxpayers. Here and there success has met his efforts to have these imposts removed as archaic and unreasonable—mainly relics of another transportation age—but practically nowhere has he been successful in changing a complicated and discriminatory tax system into a simple, just and scientific one. It is not that he has been lax in the matter of pointing out the shortcomings of most state taxing systems as they apply to street railways. In fact, he has pointed them out so often and nothing has happened that, in many cases, he has ceased to grumble and has settled down to bear his burden like a weary animal that realizes the load is heavy but must be borne.

But a revolt against such obvious tax discrimination and unfairness has been forming for years, and peculiarly enough it came not from the management of electric railways nor from stock for bond holders, but from impartial and disinterested students of the subject of taxation whose researches showed them the true state of affairs. The note of revolt has been sounded in economics textbooks for years and students of economics have been aware of the situation. But it seemed to be nobody's business in particular till the New York state committee on taxation and retrenchment came out with a scathing denunciation of the public utility tax law in its report of 1922.* After that it was taken up by the National Tax Association, which indorsed the findings of the New York state committee, namely, that the gross-net tax for public, regulated utilities was equitable, simple and efficient.

Almost every prominent economist and tax expert throughout the country has had something to say on the matter since that time, and the unanimity of opinion among these men is such as has seldom if ever been expressed with regard to any other taxation method. Not one dissentient voice has been raised—

*ELECTRIC RAILWAY JOURNAL has at various times published results of this work. In the issue of Feb. 4, 1922, appears an abstract of the voluminous report to the New York State Legislature, submitted by a committee of the National Tax Association. This committee, appointed in 1920, was headed by Hon. Frederick M. Davenport, then member of the New York State Senate, as chairman. The report covered the utility tax situation in New York.

On Feb. 16, 1923, Senator Davenport delivered an address on the same subject at the midwinter dinner of the American Electric Railway Association in Washington, D. C. This address was abstracted in the issue of Feb. 17, 1923.

In the issue of the JOURNAL for April 7, 1923, an abstract of a report to the National Tax Association was given. The committee found that a utility tax on the basis of an equality with other business was sound. In its analysis the committee recommended a form of gross-net tax as perhaps the fairest to the utility and the government.

and yet the system which they so enthusiastically recommend is actually not in operation in any one state!

It is not the purpose of this article to relate the difficulties that beset the reformer in state taxation methods, for almost every executive has had experience in this field. Its purpose is to outline in brief the gross-net tax so that its provisions may be understood by everyone in the utility field to which we seek to apply its provisions.

In the first place, it is obvious that regulation has introduced an entirely new element into our business, and one that was not considered when most of the street railways came into existence. Of course the word "franchise" itself connotes some degree of regulation, but the operator of 30 or 40 years ago never dreamed of regulation as we have it today. The street railways in every state can now be classed as a thoroughly regulated industry, removed entirely from the field of business economics. That is, the economic laws that govern ordinary businesses have been suspended and in their place there have been substituted man-made laws that prevent the economic laws from operating. A merchant or manufacturer buys and sells in the best market he can find in open competition with others in his line of activity, and his profits are dependent on his business ability and the prevailing degree of prosperity. A street car operator is limited by franchise as to where he can operate, what service he must give, and what fares he can charge. Furthermore, the upper limit of his earnings is set as a "reasonable return" on the value of his property or his investment, as the case may be, and while he assumes all the risk that characterizes the business of the ordinary *entrepreneur* he stands none of the chances of making the profits for which the ordinary *entrepreneur* enters business.

In a word, he may be able to earn economic interest if his rates are sufficient, his traffic favorable and his management good; but he is excluded by the nature of his business from making economic "profits." This being so, the question naturally arises, how should his obligation to the state in the form of taxes be measured? Obviously the value of his property, if by this we mean his investment, is no criterion, for even if the rate of fare be adequate for the service rendered, his volume of traffic may be insufficient to produce a reasonable return.

The number of electric railways today that are operating under such conditions is legion. It is only when value is measured by earnings, or with earnings as the principal factor, that this becomes a satisfactory yardstick. To such a degree is this recognized that in

almost every state where the so-called *ad valorem* method is in use, it is the earnings factor that is given the greatest weight.

PRINCIPLE OF RENT APPLIES TO THE FRANCHISE VALUE OF THE REGULATED UTILITY

But why consider any other factor than earnings? Assuming that the management is capable and honest, earnings are the only criterion by which we can measure the value of a franchise which some public body has granted to some private group. In fact, under regulation we should cease to talk about the taxation of public utilities at all and begin to speak of the "rent" which a utility must pay to the state for the franchise granted to it. And how is rent measured? Of two pieces of land, one on the prairie and one in the heart of New York, the former commands a low rent because its earning power is low and the latter commands a high rent because its earnings are high. While it is the position of the land that gives it rental value, it is the terms or conditions of the franchise that give the utility its value. There is such a thoroughgoing parallel between the two cases that it is difficult to conceive of any argument against the application of the principle of rent to franchises as to land—and the rental value is measured by earnings alone!

It is the principle of rent that the gross-net tax proposes to apply and secure for the state in the form of taxes, exactly what its franchises are worth, measured by earnings; or in other words, to have the state charge the utilities an economic rent for their franchises. Is this unfair to any one? Certainly not to the state, which can only expect to have returned to it what its conferred franchises are worth, and which does not, in theory at least, either overcharge or undercharge. Much honest effort has been spent in the past in trying to determine exactly what the state should charge for its franchises. It is obvious that its franchises differ in value and some yardstick should be available for measuring these differences. No one would think of paying the same rental or tax for a newspaper stand as for the right to supply a city with electricity. What makes the one more valuable than the other? Solely the possibility of earnings—and the one is more valuable than the other directly in proportion to earnings.

Further, this method is not unfair to the utility, which, far from seeking to avoid its civic obligations, is anxious, in its own interest and those of its customers, to know what it should pay for the privilege of owning the franchise. No one, even with the greatest sagacity and foresight, can tell in advance how a venture will turn out and no one can say until the earnings statement appears what a franchise is worth. It all comes back to this, that earnings alone measure the value of a franchise and determine the obligations of the operating company to the civic body that grants the franchise.

OBJECTIONS TO TAXATION OF NET EARNINGS ALONE

Logically, then, it might appear that the way to tax public utilities would be upon a simple net earnings plan. But it must be remembered that this would result in complete escape from taxation of many corporations and the introduction of an unhealthy principle of the avoidance of all state obligations. It is generally agreed that every individual and every cor-

poration enjoying the benefit of government should contribute something to the cost of such service, and that these services are provided for the fortunate and unfortunate alike. Therefore there should be some minimum payment exacted from every individual and corporation, whether they are prosperous or not. Besides, the expenses of the modern forms of government are not sufficiently flexible to permit of easy adjustment to the great yearly changes in income that might follow the introduction of a simple net earnings plan. The gross income tax represents both the state's security against abnormally lean years and the corporation's obligation to contribute to the expenses of the body politic. Both of these are important enough to justify some degree of taxation no matter what the earnings situation may be.

What are "gross earnings" and what are "net earnings"? The New York Legislature committee defined them as follows: "The committee suggests that gross earnings be defined as all receipts from the operation of a public utility and that net earnings be defined as net earnings from the operation of a public utility after deduction of operating expenses and taxes assignable to operation except special franchise taxes in this state, or the gross-net tax itself." In the case of New York State it was necessary to consider the special franchise taxes, but the committee recommended their removal by constitutional amendment and the replacement of all taxes by the gross-net tax. The important feature about the gross-net tax, in addition to its equity, is its simplicity, for it is designed to replace all other taxes.

There are several ways of applying the gross-net tax, but the simplest of them is "one which imposes a varying rate on gross earnings, the variation in rate depending on the relationship of net to gross, the companies paying higher taxes as their profits increase and lower taxes as they decline." The exact percentages to be applied will vary according to the tax needs of the state and to the willingness of the tax assessing bodies to recognize what is fair as between public utilities themselves and as between public utilities and other corporations. But in order to bring in to the state of New York about the same amount of taxes by the gross-net method as are now collected by other methods the committee made the following suggestion:

Every company shall pay an annual tax which shall be based on gross earnings and which shall be the percentage of gross earnings fixed herein:

Net Earnings in Per Cent of Gross Earnings	Per Cent of Gross Earnings to Be Paid as Tax
When less than 5.....	1
Between 5 and 10.....	1½
Between 10 and 15.....	1½
Between 15 and 20.....	1¾
Between 20 and 25.....	2
Between 25 and 30.....	2½
Between 30 and 35.....	2½
Between 35 and 40.....	2¾
In excess of 40.....	3

That is all there is to the gross-net tax—it is simplicity itself, it achieves equality, and it metes out justice. Unfortunately, its adoption by the various states is not an equally simple matter, for in some cases a constitutional amendment would be required, and in almost all an attempt to tax public utilities by



This Locomotive Pulled a Train of 108 Cars at a Maximum Speed of 32 M.p.h.

a. different method would provoke a storm of protest from other groups upon whose shoulders must fall any burden from which the public utilities might be relieved.

But even constitutional amendments, both federal and state, have been, and can be again, brought about by enlightened public opinion; and as the sphere of public utility influence through customer ownership and users increases, so will the demands for justice in taxation for the utilities increase.

No tax change of this kind, however desirable and just, can be brought about by ordinary political means, but it can be brought about by the intensive education of those who use the services of the utilities and bear the burden of taxation. The education of their customers is one of the duties of management in this industry, and if they apply themselves to it the desired results are sure to follow.

A Mile-Long Train Pulled in Electric Locomotive Test

New York Central Gets First of Two Large Freight Locomotives Which Will Be Used in Handling Freight Between New York City and Harmon

WITH a capacity more than double that of any electric freight engine already in service on the New York Central lines out of New York City, a large, dual-unit locomotive was given a series of exhaustive service tests by railway officials on Sunday, Sept. 19. A train of 108 freight cars, a mile in length, was hauled for more than 100 miles at a maximum speed of more than 32 m.p.h. Three round trips in all were made between Harmon and Morris Heights by the 170-ton locomotive with its trailing load of 3,000 tons.

The train of cars used in the test was said to be the longest ever seen in New York City. Only about half as many cars may be handled effectively by electric switching locomotives previously used by the railway. The new locomotive is of the swivel type, with two units, the cabs of each being connected by an articulated joint.

Centering devices are also provided which normally hold the two cabs in line, although they are capable of relative movement on sharp curves. The swivel trucks are provided with centering devices to prevent oscillations when running at the maximum speed of 60 m.p.h.

Eight motors, using forced ventilation, furnish the motive power, one being mounted on each axle. Multiple-unit control is provided so that the entire locomotive may be operated from either end. The under-frame construction is unusual in that the cab platform consists of an integral casting, made by the Commonwealth Steel Company, instead of being built up of fabricated material, as is usually done with so large a locomotive. The truck frames are also integral steel castings.

Electrical equipment for the new locomotive was provided by the General Electric Company, while the unit was constructed by the American Locomotive Company. It is the first of two for use in main line work on the New York Central between the city and Harmon and on the west side to 72d Street when that section is electrified. Officials of the railway and representatives of the General Electric Company were present at the tests, which included motor temperature, current consumption, train speed and acceleration.

Three methods of measuring motor temperatures were used. These consisted of applying thermometers to the motors, using special exploring coils placed in the armature slots and connected through slip rings to instruments in the caboose coupled directly behind the locomotive, and measuring the resistance of the motor windings. Temperatures by means of the exploring coil method were taken at regular intervals throughout the entire test, while the two other methods were employed at the beginning and end of each run. Results of the tests indicated that the locomotive could haul the specified tonnage without injurious heating.

H. A. Currie, assistant electrical engineer New York Central, was in charge of the tests and was assisted by J. T. Seaver, assistant engineer electrical engineering division; J. A. Carmody, superintendent of electrical equipment, and a crew of 24 of the electrical staff.

Brooklyn City Railroad Pays Bonus for Accident Immunity

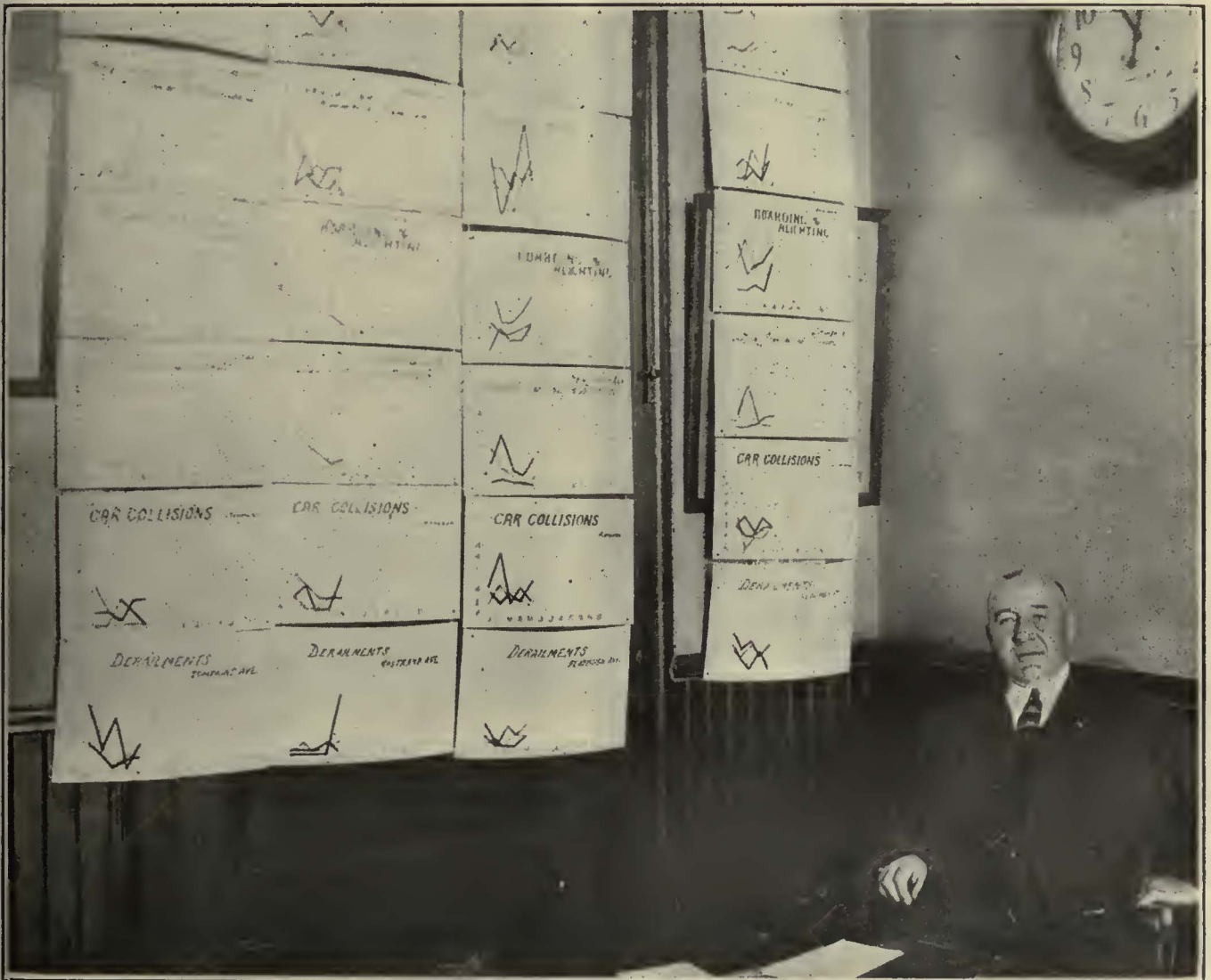
Extended Accident Prevention Work Is Being Conducted on Prominent Brooklyn Property—Spot Maps, Charts Showing Accident Data and Safety Bulletins Are Posted Prominently in Each Operating Depot—Method of Reporting Accidents Carefully Worked Out

MUCH attention is being given by the management of the Brooklyn City Railroad to accident reduction. The latest step in an extended effort along this line is the offer of a bonus of \$5 to operators for every 30 days without accident. An account of the establishment of these prizes was published on page 289 of the issue of this paper for Aug. 21, 1926. Briefly, the company agrees to pay \$5 to each conductor, motorman and safety car operator for every 30-day working period, completed on or before Nov. 30 of each year, during which the employee operates his car without an accident. This 30-day working period does not mean a calendar month, but days actually

worked, i.e., excluding days off. The only proviso is that to receive credit for a day the man must work at least eight hours of the day. An accident for which the operator is in no way responsible will not be counted against him. The plan went into effect on Aug. 1, 1926, and payment will be made to the men on Dec. 15 for the period up to Nov. 30 of each year.

"SPOT" MAPS HELP TOWARD SAFETY

As explained, this bonus offer is only one step of a large number which the company has taken to reduce accidents and to determine the cause of those which occur. One method employed along this line for some



Detalled Comparative Charts of the Accidents on Each Division Are Kept Posted in the Office of Each Division Superintendent

- Q. Equipment parts broken or defective, not otherwise classified.
- R. Disturbances.
- S. Clearance accidents, passenger striking "L" columns, passing cars or other obstructions.
- T. Employees injured.
- V. Windows broken.
- W. Substances falling from "L" structures, etc.
- X. Persons falling on stairways or platforms.
- Y. Passengers falling from platforms to track.
- Z. Miscellaneous.

It will be noted that as there are twenty classes of accidents and 26 letters in the alphabet, some letters through the list are undesignated. This is so that additions to the classification can be made, should any be thought desirable in the future.

Two sets of maps of this kind are brought up to date daily. One set is kept in the office of the general manager of the company. There is also a map posted in a conspicuous place in each depot, correspondingly marked for the routes operating out of it. This map is also brought up to date daily. It is mounted in a wooden frame and illuminated at night by lamps above it. This enables every man operating out of that depot to keep in immediate touch with the accident situation of all cars on the route, notice the dangerous crossings as regards vehicular collisions or collisions with other trolley cars, boarding and alighting accidents, clearance accidents, etc. These charts are also used as the basis for conferences on ways to reduce accidents, talks to the men by representatives of the management, division superintendents, etc.

COMPARATIVE CHARTS ARE ALSO COMPILED MONTHLY

Besides the spot maps, the company compiles monthly for posting in every depot a comparative graphic representation of the accidents occurring during the month for the past three years on the routes operating from that depot. This chart gives the accident data on the basis of each 10,000 car-miles run and is printed in colors on a poster measuring 14 in. wide by 22 in. high. The chart also carries a list of the unreported cases for the month, i.e., those cases which are brought to the attention of the management through its claims department or otherwise but have not been reported by the crew. Of course, in some cases, perhaps in most cases, the lack of a report does not mean the crew or operator was negligent in not reporting the case. The motorman, conductor or safety car operator may not have known that such an accident occurred, as when the rear of a car hits an automobile a very slight blow on rounding a corner, or when a passenger who has alighted is struck by a vehicle while passing to the curb.

In the original chart, as shown in an accompanying illustration, the 1926 line is printed in red, the 1925 line in yellow and the 1924 line in green. In the illustration these different colors can be indicated only by the relative darkness of each line.

The data on which these charts are based are available on the tenth of the month following that covered by the comparisons. The charts are then immediately printed and are posted in the depots not later than the fifteenth of the month. As will be noted, depots are arranged in the order of accidents, the depot having the lowest record of accidents per 10,000 car-miles appearing first.

Publication of the number of unreported accidents has been found to stimulate the reporting of accidents

which members of the crew might not otherwise have reported.

Detailed charts of different classes of accidents by the cars operating out of each depot are also posted in each depot for the use of the division superintendent and the men under his direction.

HOW ACCIDENTS ARE REPORTED

There is a great variety in the forms of accident reports used by electric railway companies, but the blanks employed by the Brooklyn City Railroad possess perhaps more than the usual interest because of the



Spot Maps of This Kind Help Car Crews to Know Where Accidents Are Apt to Occur. They Are Framed and Hung in Each Depot

high traffic density on the streets in Brooklyn, as well as the fact that nearly all of the lines of the company are on city streets.

The first report made of an accident by the conductor, motorman or operator is an oral one. If there is a street inspector or supervisor present or near at the time of the accident, the facts are told to him and he telephones them to the depot of that route. If there is no such official in the immediate neighborhood, the car operator is instructed to tell the facts to the first inspector or supervisor whom he may pass, and also to telephone the depot about it at his first opportunity. The written report of the accident is made out by the operator after he returns to the depot at the end of his trip and is dropped into a special slot box for that purpose.

In all telephone reports of accidents, whether by an inspector or operator, the facts are reported in the

order followed in the standard report blank. They are taken down over the telephone by the depot clerk in this same order and entered in duplicate on the standard accident blank. The clerk then immediately calls up the main office, asking for "drop 750," and gives a summary of the information reported. He then sends the original of the blank he has made out to the main office and retains the duplicate in his accident report binder.

The clerk at headquarters receiving this information keeps in his typewriter six tissue sheets, and as the information is given, he types it as it comes over the telephone. One copy is then sent directly to the claim

concerned, he tells them so and the men have an opportunity at this time to set forth any reasons why they think the accident should not count against the payment of their bonus.

OTHER OFFICE AND CLAIM DEPARTMENT RECORDS

In this statement of record kept of accidents, mention should be made of the card index of accidents kept individually for every motorman, conductor and safety car operator. There are two such records, one at the depots and one at the main office. The depot record is kept on a card with space for each day during the year on which the classification of the accident and the discipline administered can be entered. This card record is kept alphabetically by names of employees. A very similar record is kept in the main office except that there the record is kept in Kardex index record, which is considered more convenient because records have to be kept here of all the platform men on the system, numbering altogether about 2,400.

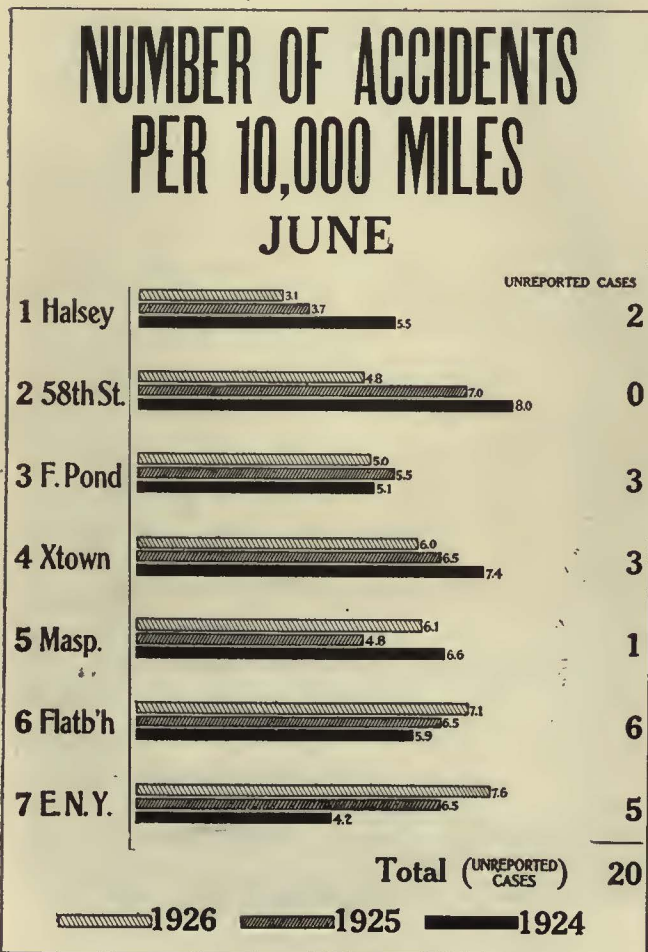
It is considered desirable to keep each division superintendent informed of the later history of every reported accident on his division. This is a plan sometimes neglected on other properties. On the Brooklyn City Railroad, in every case where a settlement is made amounting to more than \$50, the claim department gives all facts to the division superintendent together with any special points which may have come up, indicating the advisability of a change in operating practice from that depot, or special instructions to the motorman or conductor involved in the accident.

RESULTS HAVE BEEN ENCOURAGING

The safety program of the company, as outlined, is in the general charge of A. L. Hodges, assistant to the general manager, and the board of directors feels that its policy of checking accidents and rewarding operators for immunity from accidents, as described, is giving good results. Previous to the establishment of the bonus system, the company gave credit for immunity from accidents for 25 consecutive working days. The merit and demerit system of discipline is employed on the Brooklyn City Railroad, and these credits were added to individual records in the usual way. Since the announcement of the bonus system, these credits are no longer entered on the employee's record.

Still another practice of the company has helped to reduce accidents, it is believed. This is the plan of bringing suits for damages to cars caused by vehicular collisions for which the operator of the vehicle was responsible. Information of this kind comes in, of course, with the accident reports already described. If, after an examination, the company believes that its employees were not responsible for the accident but the driver of the other vehicle was, a letter is sent to the owner of the vehicle causing the injury, setting the damages at a definite figure and stating that the company expects to be reimbursed. If no reply is received within a reasonable time, the matter is turned over to the claim department, which is asked to bring suit.

The present cost of damages on the Brooklyn City Railroad amounts to about 6 per cent of the gross receipts, which is considered low for a property operating purely city service under the congested street conditions existing in Greater New York. It is hoped that even this figure will be reduced.



Charts with Comparative Accident Records for the Past Three Years Provide Another Way of Stimulating Care in Operation

department and other copies to the heads of other departments concerned. Thus, if the accident was caused by any defect in the track or developed any such defect, a copy would be sent to the head of the track department of the company.

The blank at the right of the two shown on page 570 is that used by the car crew in making reports. That at the left in the group is the one employed by the depot clerk.

As explained, a report of every accident of which there is a record goes promptly to each division superintendent so that he has extended details shortly after the occurrence. He also has the names of the transportation employees involved and can interview them promptly as to their responsibility and other details. If he feels as the result of this inquiry that the men should lose the chance of their bonus for the 30 days

London Tramways Improve Service to Meet Bus Competition

Discontinuance of Trailer Operation and Installation of More Powerful Motors Have Resulted in a Substantial Increase of Speed—Better Lighting and Use of Comfortable Plush-Upholstered Spring Seats Have Made the Car Interior More Attractive



Westminster Bridge, Where Tramcars and Buses Are in Active Competition

LONDON is a battleground of competitive transportation undertakings. Illuminating figures are quoted in a recent report issued by the London and Home Counties Traffic Advisory Committee showing the rapidity and extent of the growth of bus competition with tramways during the last six years. In January, 1920, the number of buses plying for hire in competition with the municipal tramways was 612, with an average seating capacity of 34. Four years later they had increased to 1,166, and in January, 1925, to 1,318, with an average seating capacity of 50. At this point the position appears to have been stabilized by action taken under the London traffic act of 1924. Conditions such as these convinced those responsible for the operation of tramways of the prime necessity of bringing them to the highest standard of efficiency both in respect to speed and comfort. With this end in view various steps have been taken to increase the popularity of the service.

SPEED INCREASED TO 9.51 M.P.H.

According to the records of the London County Council Tramways the average speed of cars has risen from 9.29 m.p.h. in 1922-1923 to 9.51 m.p.h. in 1924-1925. This increase in two years is the more noteworthy because of the densely congested and thickly populated district served by the L. C. C. system.

Two factors have been primarily responsible for the improvement—first, the discontinuance of trailer

operation, and, second, the installation of higher powered motors.

In 1922 the London County Council Tramways was operating trailers on three important routes on the southern part of the system, namely, Victoria Embankment to Norbury, Victoria Embankment to Merton, and London Bridge to Greenwich. At that time there were 150 trailers on the system. While it was felt by the management that trailer operation had been satisfactory at the time of its introduction, more recently it had become a source of serious delay by reducing the speed of all cars on routes where trailers were used. Moreover, in bad weather the open upper decks of the trailers were not being used to the fullest extent. For these reasons it was decided to make careful investigations to determine whether or not it was desirable to continue the operation of trail cars. Tests were carried out on the Merton and Streatham routes, in order to make a comparison between the operation of routes with and without trailers.

From these tests it was found that the operation of single units possessed many advantages over the operation of trailers, including reduced running time, time saving in changing ends at the terminus and increased revenue. On the Merton route the reduction in running time amounted to six minutes in an average round-trip time of 96 minutes, or in other words an increase in speed of 0.7 m.p.h. On the Norbury route the time saved was four minutes in the morning and six minutes



On Many Streets in London Tramways and Buses Vie with Each Other for Traffic

in the evening on an average round trip of 99½ minutes, equivalent to an increase in speed of 0.5 m.p.h. As a result of these tests it was decided that it would be more economical to operate the service with motor cars only and discontinue the use of trailers on all of the tramway lines.

In March, 1923, the London County Council Tramway management came to the conclusion that it would be possible to effect considerable improvements and economies in the service by substituting modern, up-to-date motors for the older equipment on the cars used on certain routes where conditions were favorable to the attainment of higher average speeds. The latest type of car purchased by the Council had been fitted

with high-power ventilated motors and had been in operation sufficiently long to convince the officials of its value. As a result of using the new type of motor it had been found that considerable reductions were effected in the cost of operation, while at the same time there was an increase in speed.

As the first step in this direction, 200 cars built in 1907-1911 were equipped with two 60-hp. motors each in place of 42-hp. motors. The latter were substituted in place of 35-hp. and 30-hp. motors on older cars. In February, 1924, an extension of this scheme was decided upon and an additional 200 cars were equipped with 60-hp. motors. Thus a total of 800 cars were re-equipped with motors of higher capacity, the cost being about £300,000.



At Left, Spring-Cushion, Plush-Upholstered Seats Are Being Installed on Cars of the London County Council Tramways to Encourage Traffic. At Right, Installation of Additional Lamps Gives 60 Per Cent Better Illumination Inside the Car

The effect of these changes on the speed of operation is shown in the accompanying table.

During the war and immediately afterward it was not possible for the London County Council to maintain the cars and track in their usual efficient state. For this reason figures for years prior to 1920-1921 are not given. By 1922, however, the pre-war condition had been regained, and it was obvious that something of a positive character was necessary before any substantial improvement in speed could be attained. The discontinuance of trailer operation and the installation of more powerful motors have accomplished this end. As shown by the tabulated figures there has been an increase of 0.25 m.p.h. in speed and an increase of 5.5 miles operated per car per day.

Assuming that two trailers are equivalent to one motor car, it will be seen that the average number of cars in use in 1924-1925 was only ten more than in 1922-1923, but the total mileage was 4,500,000 more. The increase in car mileage was from 63,500 to 68,000, or more than 7 per cent. Had this been accomplished entirely by placing additional units in service, 100 more cars would have been required. Thus the increase in speed has been equivalent to the provision of 90 new



London County Council Tramways is Improving the Quality of its Service by Installing More Powerful Motors and Rearranging the Interior of Cars of This Type

The number of electric lamps in the lower saloon was increased from six to ten. Pneumatic signal bells were arranged for the convenience of passengers. The ceiling hand rails were rearranged to suit the new seats. Outside the car was painted in vermilion, in striking contrast to the dull chocolate color of the other cars. Preliminary experience with this car was so satisfactory that in August the London County Council authorized the equipment and rearrangement of

100 more cars according to the same plan.

Many other tramways in the British Isles are faced with similar problems of bus competition

and are considering taking similar steps to meet the situation. The subject was discussed at length at the annual meeting of the Municipal Tramway Association Sept. 8-10. An abstract of these proceedings appears on page 584.

To Park or Not to Park

IN BEHALF of rational city planning and sound municipal finance in connection with street widening, transit construction, etc., the *American City Magazine* in its October issue suggests a statement of principles concerning parking and storage of automobiles applicable in all cities. The first of these is to the effect that streets are primarily provided for general use as lines of communication and that the rights of the different classes of traffic to unlimited use of the streets, including the right to park, are subject to the public and civic welfare. Another states that the right to move a car is superior to the right to store a car on the public ways, although there is no objection to unlimited parking where it does not interfere with the expeditious movement of traffic and with reasonable access of vehicles to the curb. All future department stores, theaters, tall office buildings and other business structures catering to large numbers of customers or tenants should be built with the knowledge that space must be provided off public streets for loading and unloading merchandise and storage of customers' automobiles.

Favorable comment on these principles is made in the same issue by Robert Whitten, city planning consultant, New York; S. J. Williams, director public safety division, National Safety Council; Walter Jackson, fare and bus consultant, Mount Vernon, N. Y., and A. H. Outhank, chief domestic commerce division, U. S. Department of Commerce.

RESULTS OF EQUIPMENT MODERNIZATION

Year	Average Speed, M.p.h.	Average Number of Cars in Use		Miles per Day per Car	Total Mileage, Millions
		Motor Cars	Trailers		
1920-21	9.02	1,278	116	120	57½
1921-22	9.13	1,325	112	121	59½
1922-23	9.29	1,421	76	121½	63½
1923-24	9.49	1,445	17	124½	64*
1924-25	9.51	1,469	...	126½	68

*Strike during ten days.

cars on the system, or, allowing for necessary spare equipment, the saving is equivalent to the annual interest charges on 100 new cars and their operation for fourteen hours a day.

CARS MADE MORE COMFORTABLE

After having made these changes, which increased the speed of tram cars to the same or greater than that of the buses, the management next turned its attention to increasing the passenger comfort of the vehicle. An experimental car was built embodying many improvements in design. Five cross seats on each side of the center aisle with longitudinal seats in each of the four corners were provided on the lower deck. The floor was covered with a thick cork carpet.

Youngstown Adopts Series Car Lighting

Twenty Lamps in a Single Circuit Provide Improved Illumination at Lower Cost—Newly Developed Cutout Makes Detection of Dead Lamps and Replacement Easy

By H. H. HELMBRIGHT
National Lamp Works, General Electric Company

NOT the least among the features of the new cars of the Youngstown Municipal Railway, mentioned in the article in last week's issue by R. N. Graham, manager of this company and the Pennsylvania-Ohio Electric Company, is the system of lighting. A series of twenty lamps on one circuit replaces the ordinary five-in-series method.

Remove any one of the inclosing shades above and there you will find an automatic cutout lamp, used for the first time as standard equipment by any operating



This Picture of the Car Interior Was Taken Entirely by the Light of the New Lamps.
Note Absence of Glare

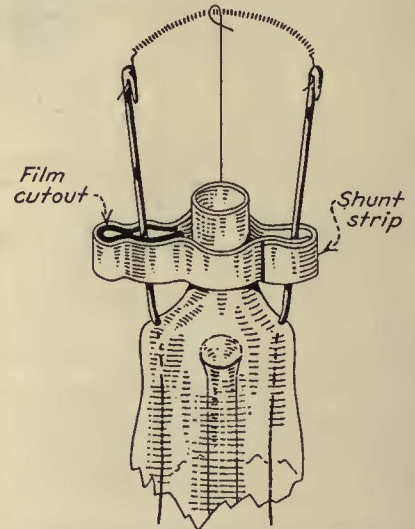
company. This new lamp is the result of several years work on the part of the incandescent lamp development laboratories of the General Electric Company, located at Cleveland, Ohio. Several preliminary installations were described in *ELECTRIC RAILWAY JOURNAL* for Aug. 22, 1925, page 275.

In order to appreciate the real meaning of this new development it might be well to explain the difficulties which have been experienced in the past when attempting to use gas-filled lamps on street railway circuits. Past practice has called for the operation of vacuum-type lamps arranged in series circuits of five lamps each. When Mazda C (gas-filled) lamps of the ordinary type are operated on such circuits serious arcing is encountered when a lamp burnout occurs while the circuit is alive. This arc, due to the conductive effect of gas, is often sustained indefinitely. It will continue to melt away the lead wires and carry on through to the lamp base, usually ruining the socket and wiring. This difficulty has been a serious handicap to the street railway field, for the latter has not been able to keep

pace with the better illumination trend in other fields using gas-filled lamps.

The new lamp is so constructed that the burnout arc is quickly "killed" by means of a small nickel and aluminum device clamped around the lead wires, which provides a shunt across them should the lamp burn out. A simple aluminum oxide cutout on one of the lead wire locations will break down should a lamp filament break while unlighted and it will shunt the lead wires when the circuit is again energized. The construction and method of installing this device are shown in one of the illustrations.

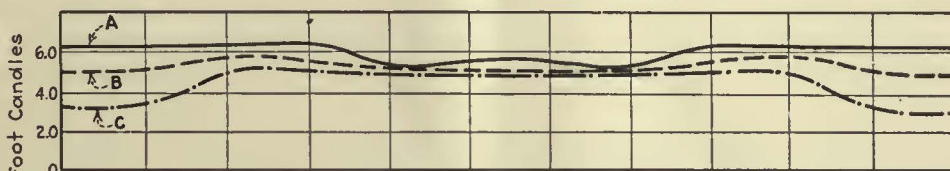
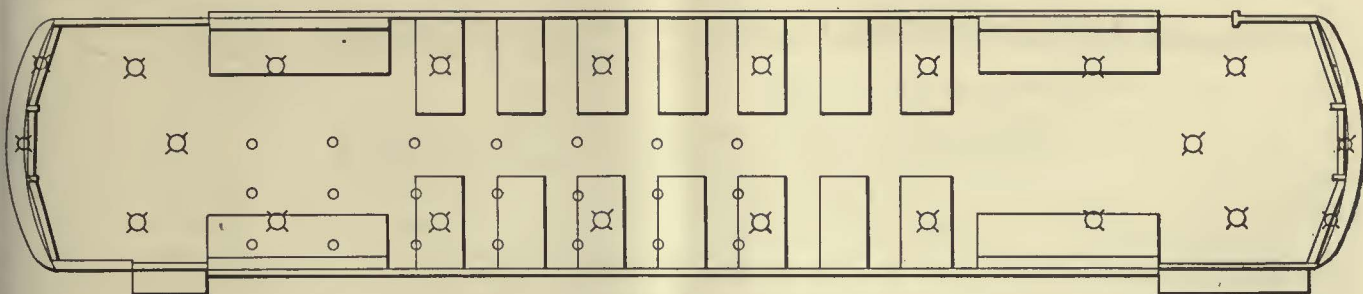
In another diagram is shown the seating arrangement of the cars and also the locations of the lamps. All outlets shown in the seating portion of the car are equipped with Ivanhoe inclosing-type street railway luminaires fitted with short-circuiting sockets which permit the replacing of lamps without disturbing the other lamps in the circuit. The platform outlets are equipped with deep bowl white enameled steel reflectors. These reflectors direct the light toward the steps



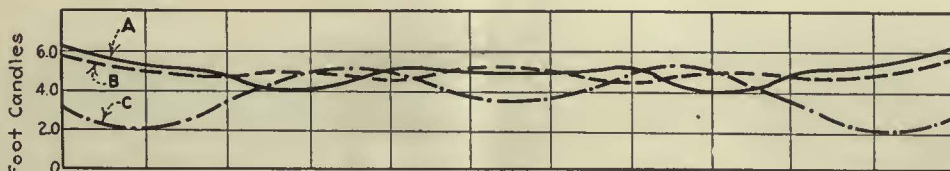
The Film Cutout Short Circuits the Lamp in Case of a Burnout or Break in the Filament

and also prevent specular reflection from the cab windows reaching the operator's eyes. One lamp is provided in the Hunter sign at each end of the car. Electric Service Supplies Company's No. SR-95 Golden Glow headlights are connected with the rear center platform outlet by means of a throw-over switch, so as to provide for double-end service. Each of these outlets uses a 30-volt, 1-amp., A-19 inside frosted bulb Mazda C lamp and all are connected in a single series circuit across the 600-volt line. Therefore, a string of twenty lamps is used. Had the voltage been 5 per cent more, or 630 volts, 21 lamps would have been installed.

The accompanying graph shows the intensity as well as light distribution secured. These data were obtained by taking illumination measurements at normal reading position (33 in. above the floor) at the locations shown. Since the car interior is of symmetrical design only one-fourth of the car area was considered, this method being accepted as sufficient to provide an average for the entire car. It will be noted



Horizontal Plane 33 Inches Above Floor



Forty-Five Degree Plane 33 Inches Above Floor

Above, Floor Plan of the Youngstown Car, Showing Locations of Outlets and Positions for Photometric Tests.
Below, Light Intensities in Horizontal and 45-Deg. Planes at Reading Height

that the average intensity for the seating portion of the car of 6.0 foot-candles is obtained on the 45-deg. reading plane. Approximately 360 watts are used in this section.

Using for comparison the illumination provided by 36-watt, 120-volt, Mazda B lamps arranged in circuits of five lamps each, 570 watts would be required to provide this same intensity. On the basis of the results with 36-watt, 120-volt Mazda B lamps throughout the car a total of 820 watts would have been required, compared with 600 watts using the cutout lamp.

However, the light efficiency of this gas-filled lamp is but one of its many advantages. For instance, when a lamp burnout occurs, the one lamp only becomes darkened; the remaining nineteen lamps, although connected in the same series circuit, continue to operate. This greatly facilitates replacement of the burned-out lamp. It is unnecessary to check the circuit, as required when using five ordinary lamps in series.

HEAVY FILAMENTS GIVE LONG LIFE

The filament in the Mazda C lamp is approximately 2½ times as large in diameter as that used for the standard 36-watt Mazda B lamps and is about one-fourth as long. It is coiled and supported at three points. These features provide a lamp that not only is highly efficient but extremely rugged. The short life experienced from Mazda B lamps due to filament interlocks is entirely eliminated.

Another advantage experienced by the Pennsylvania-Ohio company is that the problem of lamp theft is practically solved. The new lamp, being designed to operate at 30 volts, will immediately burn out when placed on house lighting circuits.

Many complimentary remarks have been made by the patrons of the Pennsylvania-Ohio company since the cars

have been operating. An abundance of light is furnished and at the same time glare is reduced to a minimum. The white ceiling, together with the low brightness of the lighting glassware, has made this possible.

Group Insurance Expanded at Schenectady

CONTINUED co-operation between the management and employees of the Schenectady Railway, Schenectady, N. Y., has resulted in an expansion of the company's group insurance program to include health and non-occupational accident protection and accidental death and dismemberment coverage. Life insurance, in force for about two years, totals approximately \$480,000, and is about the same in amount as the accidental death and dismemberment insurance.

The combined insurance plans enable an employee to receive a maximum of \$1,000 life insurance and \$1,000 accidental death and dismemberment protection. Under the provisions of the health and accident policy, an employee will receive benefits ranging from \$10 to \$20, according to the size of his weekly salary.

Through the provisions of the accidental death and dismemberment policy, the family of an employee killed in an accident will receive \$1,000, in addition to the death benefits established by his life insurance, while if the employee suffers the loss of an eye, limb, or of any two members, he himself will receive a cash payment of either \$500 or \$1,000, according to the extent of his injury.

The insurance, under both new and original contracts, is being underwritten by the Metropolitan Life Insurance Company and covers about 360 employees of the railway.

Accidents Reduced in St. Louis

Much Credit Is Due to the Activities of the Safety Director—Prizes Offered for Various Safety Contests on the United Railways System

CONTINUED decrease in the number of accidents on the United Railways of St. Louis has resulted from the interest in safety matters created through the work of E. K. Eastham, safety director of that system. For the year 1923 there averaged 2,112 accidents per month. In 1924 this was reduced to an average of 1,781, in 1925 to 1,738 and in 1926 for the first four months to 1,619 per month. The high point of 3,181 car-miles per transportation accident was reached in July of 1925. Practically every month for the last

age in the congested districts. In order to put these carhouses on a parity with other stations, they are assigned arbitrary handicaps from par or zero to twelve points for those carhouses where the traffic conditions are the worst. The final scoring to determine which carhouse receives the dinner is obtained in the following manner: The stations are first listed in their relative order in regard to the first point named above, boarding and alighting accidents. The station ranking first received 39 points, the station ranking second 36 points and so on down the list, subtracting three each time. The second point above, all other transportation accidents, is listed in the same way—the station at the top receives 26 points and the next station ranking below receives two less points, and so on down the list. Similarly the no report claims are



One of the Thirteen Stations of the United Railways of St. Louis at Which Safety Work Is Being Actively Promoted by the Safety Director. This View Illustrates North Broadway Car Station, Completed Less than Three Years Ago

two years has resulted in a higher mileage per transportation accident than the comparative month the year previous.

These results are accomplished in a number of ways; one or two different kinds of contests are always in progress. In the past, contests have been run between the different car stations of the property for the best reduction in automobile collision accidents in which a \$100 prize was given. At another time a \$100 prize was offered for the best reduction in the total of all accidents and a similar prize in another contest was given to the car station making the best reduction during the year previous of claims arising on which no reports had been filed.

HOW THE RECORDS ARE CALCULATED

Every three months the motormen and conductors producing the best accident records are given a dinner by the company. The comparison on which the best accident record is calculated in this safety dinner contest is based on a number of points. First comes the item of boarding and alighting accidents, the score on this point being determined by the number of passengers carried per accident. The second point is based on all other transportation accidents and is scored by taking the sum of the total mileage plus one-tenth of the passengers carried and dividing this sum by all accidents. The third point is the calculation of per cent of "no reports claimed." Scoring for this point is obtained by dividing the number of no reports claimed by the total of all accidents.

Certain stations operate greater proportional mile-

calculated. The station ranking first in this receives thirteen points and each station below in turn receives one less, and so on. These points are then added together with the handicap allowed and the station having the highest number of points receives the dinner.

Beginning with March 1, 1926, another contest was started. The carhouses having the three highest scores for the six months beginning with that date may each elect one trainman to attend the National Safety Congress in Detroit with Mr. Eastham.

In addition to these contests many meetings are held. Safety work is considered to include personnel work as well. There is a safety committee on the property. Every two months two additional men are elected, one motorman and one conductor from each station. Old members do not retire, but stay on the committee. At present this committee numbers about 400, there being about 32 men from each station. Meetings of the safety committee are held once every four or five weeks.

Fatalities in which the United Railways was involved in any way were 31 in 1925. This figure is compared with the lowest record of fatalities occurring in 1920 and 1922 with 25 fatalities and the high point in 1910 of 70 fatalities. The safety director, in further reporting on the activities of his department in 1925, stated that 305 meetings that were directly connected with safety work on the United Railways were held during the year. There were 78 other meetings either of the St. Louis Safety Council or committees of that council. Safety talks to the number of 195 were given by the safety director during the year.

Maintenance Notes

Service Obtained from Trolley Wheels

DISCUSSING results obtained with standard makes of trolley wheels, the Electric Railway Association of Equipment Men, Southern Properties, gave some interesting figures at the tenth semi-annual meeting. The Dallas Railway, Dallas, Tex., uses a 6-in. wheel with a 1-in. axle and obtains an average of 3,500 miles per wheel. This company is now testing out trolley shoes and finds that they reduce the number of delays. Cars are equipped with two trolley poles, one of which has a wheel for backing up. The trolley wire is lubricated every three months at a cost of approximately \$1 per mile. This company also uses some 4-in. diameter wheels and obtains an average of 8,000 miles.

Of other railways discussing this question, the Chattanooga Traction Company, Chattanooga, Tenn., uses a 4-in. wheel and obtains 1,800 miles. The Mobile Light & Railroad Company, Mobile, Ala., averages 6,000 miles from a 4-in. wheel. The Knoxville Power & Light Company, Knoxville, Tenn., uses a combination of trolley shoe and wheel for backing up, and has had trolley shoes in service now on its interurban lines for two years and found them entirely satisfactory. The company uses 18 to 24 lb. tension at the wire. The Birmingham Electric Company,

Birmingham, Ala., uses a 6-in. wheel and obtains 9,000 miles for the wheels and 5,000 from bushings. The Arkansas Central Power Company, Little Rock, Ark., uses 4-in. wheels with $\frac{1}{2}$ -in. axles and obtains 9,500 miles. Both the Georgia Railway & Power Company, Atlanta, and the New Orleans Public Service, Inc., New Orleans, La., use 6-in. standard wheels, Atlanta obtaining about 6,000 miles in city service and New Orleans 11,000 miles.

Electrically Heated Babbitt Pots Installed

WHAT is probably the first complete installation by an electric railway of electrically heated babbitt-ing equipment has been made by the Los Angeles Railway, Los Angeles, Cal. This equipment is used for re-babbitting the car journal and armature bearings. The installation consists of three electrically heated and automatically controlled melting pots and a preheating oven, all of General Electric manufacture. In addition, an electrically heated Oakite cleaning tank and various metal-lined bins and benches made in the shops of the company have been installed.

Great effectiveness in the babbitt-ing process is obtained by maintaining a uniform temperature with the thermostatic control. This is set for the correct heat, which is then automatically maintained constant. The

Oakite cleaning tank, the melting pots and the preheating oven are arranged in order to obtain the most efficient step-by-step process of production. Methods used in rebabbitting bearings were described in the ELECTRIC RAILWAY JOURNAL for July 26, 1926.

Old Passenger Cars Converted to Sand Cars

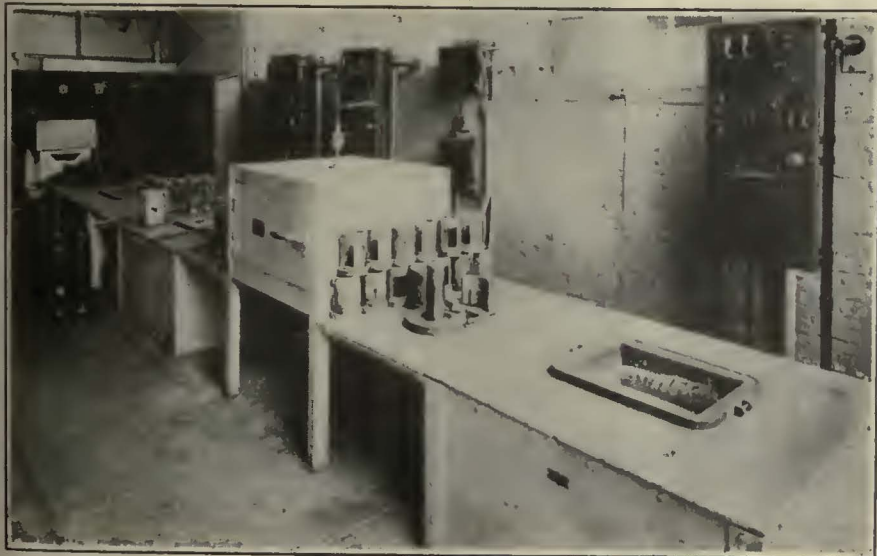
HAVING a number of old passenger cars which had fulfilled their period of usefulness as such, the Portland Railroad, Portland, Me., converted several of them for duty as sand cars. In this capacity they



Filling a Pall from the Gate in the Side of a Rebuilt Sand Car

serve two functions, the first being to operate as track sanders in periods of inclement weather, while the other is in their use as sand reservoirs while in the shops. Small sand gates located in the sides of each unit are shown.

Large bins constructed in each of the sand cars contain 5 cu.yd. of sand when filled to capacity. All of the fittings, such as seats, heaters, etc., were removed from the interiors of the cars when the bins were added. No further changes were necessary, other than to provide the necessary sand feeders for covering the rails and inserting the sand gates.



New Bearing Section of the Los Angeles Railway Shops

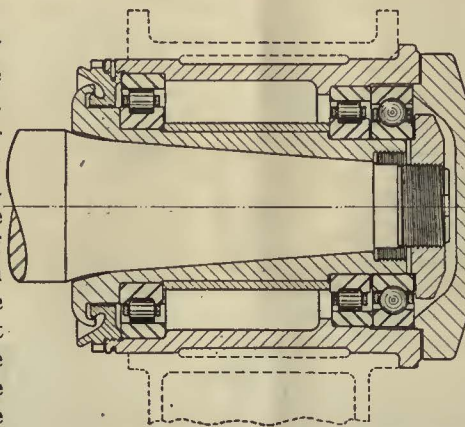
New Equipment Available

Front-End-Mounted Compressor

FOR the purpose of getting away from troubles caused by undue strain upon timing gears, chains, belts or universal joints, the Christensen Air Brake Company, Cleveland, Ohio, has worked out a compressor for mounting on the front-end gear case cover plate of the vehicle engine. This is driven directly from an eccentric on the main crankshaft. This makes it practically an integral part of the engine and, besides, a very simple construction and drive. This type of mounting for the compressor has been incorporated in several different makes of buses. The one shown in the illustration is on the front-end gear case cover plate of a Continental Model 14H engine installed in a six-wheel bus for the Cleveland Railway.

Improved Roller Bearing Mounting

BOTH radial and thrust loads are cared for in a combined roller and ball bearing designed particularly for electric railway use, which has been announced by the



Combined Roller and Ball Bearing Designed for the Axle Boxes of Electric Cars

Norma-Hoffman Bearings Corporation, Stamford, Conn. The radial loads are carried on roller bearings and the thrust loads on ball bearings, all being mounted on a tapered

sleeve. The ball bearings are thus relieved of all radial loading as they do not have contact around the outer periphery. The accompanying drawing shows the construction used in this new design of axle box mounting for electric cars.

Advantages claimed by the manufacturer include a reduction in tractive resistance, quicker acceleration and easy dismantling without destroying the original fit of the inner rings on the sleeves. Adequate protection is provided against dirt and moisture and ample space for lubricants.

Adjustable Seats for Bus Drivers

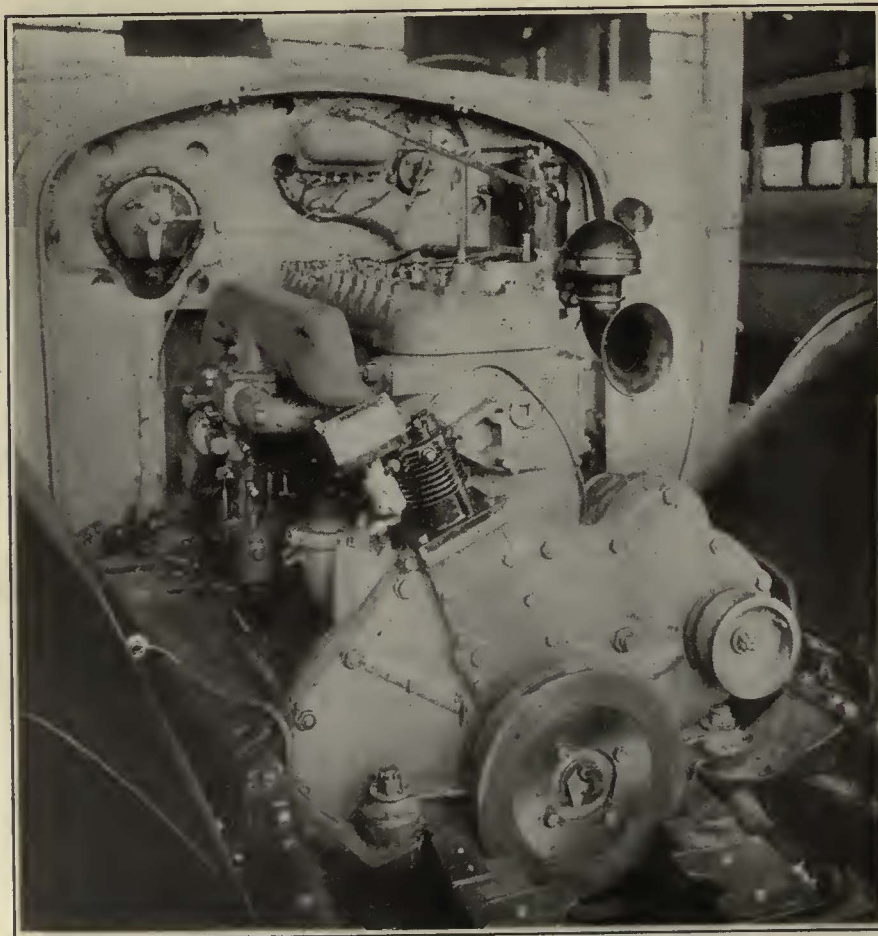
SEATS of the adjustable type for bus drivers have been developed in two styles by the Eberhard Manufacturing Company, Cleveland, Ohio. In one of these styles the seat is provided complete with pedestal. In the other style the seat is designed to be mounted directly on the battery box in such a way that the box cover



Adjustable Seat with Pedestal. The Seat for Mounting on Battery Box Is Similar in Style

and the seat can be tilted to inspect the battery.

It is possible for the driver to move the seat backward or forward to suit his own comfort merely by turning the thumb screw A, which is shown in the accompanying illustration. It is unnecessary for the driver to leave the seat in making this adjustment. The screw which moves the seat into the desired position also locks it in place. Flat springs are so arranged that the operating mechanism cannot rattle under road shocks. Both of these types of seats will be on exhibition at the A.E.R.A. convention in Cleveland.



Christensen Compressor and Governor Mounted on Front-End Gear Case Cover Plate of Continental Model 14H Engine Installed in Six-Wheel Bus in Service on the Cleveland Railway

Powerful Snow Fighter and Dumper Designed

DRIVEN by a 100-hp., six-cylinder engine the new snow-fighter and dumper now offered by the Walter Motor Truck Company, Inc., Long Island City, N. Y., has tremendous pushing power. A special transmission is provided with five forward speeds so as to give a range of ten to one.

The front plow is a new patented type designed to throw the snow well off the road. This is of particular value in steam-electric railway tracks. The plow can be swung to either side to take advantage of traffic or drift conditions. A center scraper is spring mounted so it can scrape right down to the road surface.

Combination Guide Rail and Luggage Loft

BAGGAGE racks of an unusual type have been incorporated in a recent de luxe city type bus body built by the Baker-Raulang Company, Cleveland, Ohio. A lined compartment extends along each side of the bus. It provides sufficient capacity to care for the hand luggage of the passengers. At the edge is a guide rail finished in a natural wood, which serves to steady passengers in going to and from their seats and



Improved Bus Construction Provides Folding Seats Across the Rear and a Combination Guide Rail and Luggage Loft

for the support of standing passengers. This type of construction lends a pleasing appearance to the de luxe model bus, which has leather-covered seats.

Another feature of the Baker-Raulang design is the use of five individual folding seats across the rear of the bus.

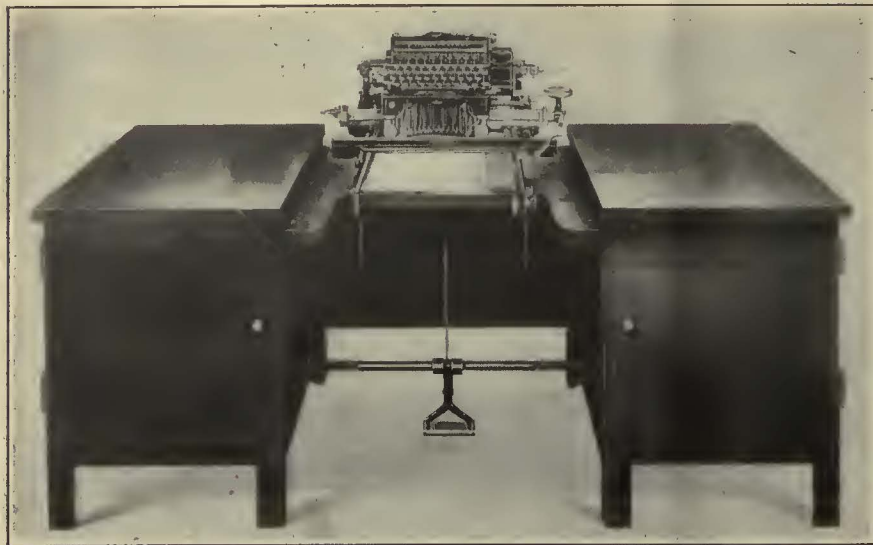
Two Heavy Capacity Cranes

SIMILAR in many respects to the 5-ton size of crane but of a capacity of 6 and 7½ tons respectively, two new units have just been brought out by the Universal Crane Company,

Cleveland, Ohio. The 6 and 7½-ton units are rated at 12,000 and 15,000 lb. respectively at 10 ft. radius. Their development is the outgrowth of a demand for the mobility, adaptability and all around speed of this type of unit. The appearance and size of the new units are the same as for the present 5-ton crane. They are full revolving with a swing speed of 6 r.p.m. The rope speed is 140 ft. per minute. The units are gasoline-powered with a 44-hp. Waukesha motor and are one-man operated, only three levers and one pedal being used to control various swinging and bucket operations.



For Placing Rails in Position After They are Unloaded at the Side of the Street the New Cranes Are Found of Particular Convenience



Accounting Machine Embodying the Flat Writing Principle

Time Saved by Electric Accounting Machine

EASE of operation features a new electric accounting machine just announced by the Elliott-Fisher Company, Harrisburg, Pa. This machine relieves the operator of every effort except the manipulation of the keyboard. The flexibility of the machine makes it readily applicable to existing systems and any type of accounting routine may be effectively placed under mechanical operation. With an accounts payable system with columnar distribution all amounts are added simultaneously, sums computed and proved. The electric motor handles all movements of the machine hitherto accomplished by manual effort.

Braking Blocks for Automotive Equipment

TWO influences are at work to improve the braking methods used on heavy motor vehicles. One is the growing size and weight of these vehicles. Operators are realizing that the methods suitable for lighter cars are not necessarily the best

when the weights to be controlled reach 10,000 lb. or more. This is shown by the growing use of power brakes on heavy buses and trucks. The other influence tending toward more scientific braking is the entry into the automotive operating field of many steam and electric railroads which are accustomed to the use of standardized brake rigging on heavy high-speed cars and want the same definiteness and efficiency of brake equipment on the heavy auto vehicles they are placing in service.

With these thoughts in mind the American Brake Shoe & Foundry Company has been at work for some time past on the development of brake materials and their method of application to auto buses and trucks and have placed on this problem the expert knowledge gained by the company in 25 years of experience in the stopping of railroad trains, both steam and electric. Accompanying this development has been a series of extended tests, both on the brake materials testing machine of the company at Mahwah, N. J., and in actual practice on a 16,500-lb. truck. The development work is finished and the company is now putting on

the market, through a subsidiary, the American Brake Materials Corporation, a form of brake block and method of its attachment for which notable advantages are claimed over the customary brake band or liner in which some kind of fabric is used as a basis.

With this latter type of brake, the customary method of varying the brake effect has been to increase the area of the brake band or liner so that now on a drum surface of 57 in. in periphery (or 18 in. in diameter) a length of 36 in. for the brake lining is not uncommon on heavy buses and trucks. With this size of brake liner the length of free radiating surface of the drum itself would be 21 in. or the difference between the periphery of the drum, 57 in., and the length of the liner, or 36 in. With the new brake material of the American Brake Materials Corporation two brake blocks, each of only 6 in. length in braking surface, are used, giving 45 in. of drum surface during each revolution for the dissipation of heat.

The brake blocks of the American Brake Materials Corporation are of a dense compressed material which has no metallic content and is unaffected by oil, grease or water. This brake material is compressed under very high pressure into a steel back or shell, which is attached to the brake arm by bolted keepers. These bolts are set radially to the drum, while the bevels on the sides of the keepers are parallel to each other. This prevents the block from becoming dislodged in the remote case that the lock nuts on the bolts should become loose and drop off. At the same time the method of mounting allows the blocks easily to be replaced when they become worn. During such replacement the supporting arm does not have to be removed.

Great stress is laid by the manufacturers on the simplicity of this method of attachment as compared



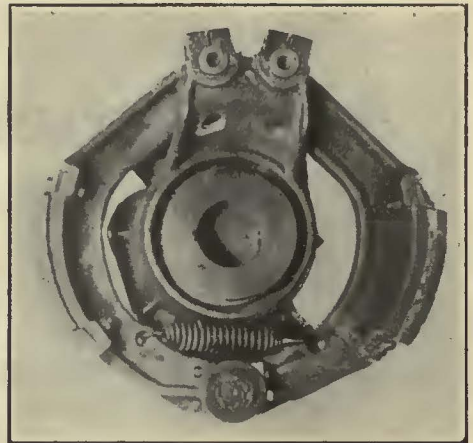
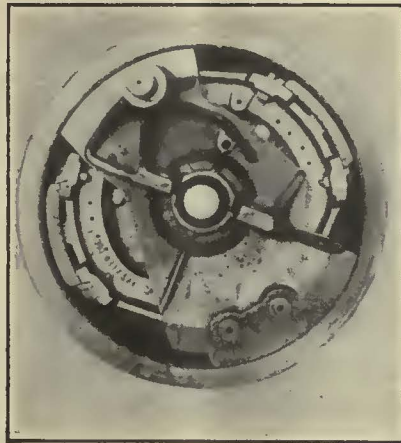
At Left, Brake Block on Arm. In Center, Brake Block by Itself. At Right, Spider with Arms and Blocks in Place

with the rivets employed with the usual brake band or liner. They also emphasize the desirability of a brake material incompressible under the pressures used in service as compared with a fabric liner, which is not only compressible but whose braking effort varies with use. With a constant brake effort it is possible for automotive engineers to establish a suitable foundation for the brake rigging.

The manufacturers have standardized the shape of the brake blocks described so far as it has been possible to go at present, following in this matter their pioneer work in standardizing the shapes of brake shoes for electric railways. In other words, all blocks for trucks and buses weighing more than 10,000 lb. will have a definite length, width, thickness and back radius, as well as a standard keeper. The only dimension which it has been impossible to standardize is the radius of the wearing surface of the block, which necessarily has to vary with the diameter of the drum. This modification in the shape of the brake block is obtained during manufacture by changing the male die used to form the surface.

Briefly the advantages claimed for the new brake block follow:

1. Friction equal to any in fabric liners, and this friction remains constant throughout the entire life.
2. Smaller contact area needed, leaving greater drum surface to dissipate heat.
3. Durability so far in excess of fabric liners that brake wear becomes an unimportant factor.
4. No metallic contact whatsoever. Drums will not be scored or cut.
5. Can be attached or detached readily by unskilled labor, without removing brake block from the brake arm.
6. No riveting required—attached to the shoe with solid bolts.



At Left, Spider with Arms and Blocks Within Brake Drum. At Right, Spider Alone

7. Absolutely unaffected by water, oil or grease.
8. Cannot burn, smoke or squeal. Will not grab.

As already explained, the brake blocks mentioned were thoroughly tested by the manufacturers before being placed on the market. The testing machine at the Mahwah works of the American Brake Shoe & Foundry Company, on which one series of tests was conducted, is illustrated. It is the same machine used to test railway shoes and is capable of duplicating service conditions up to 80 m.p.h. and brake block pressures of 20,000 lb.

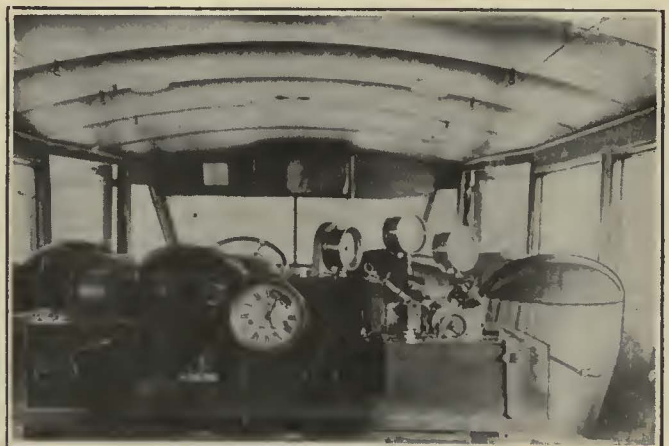
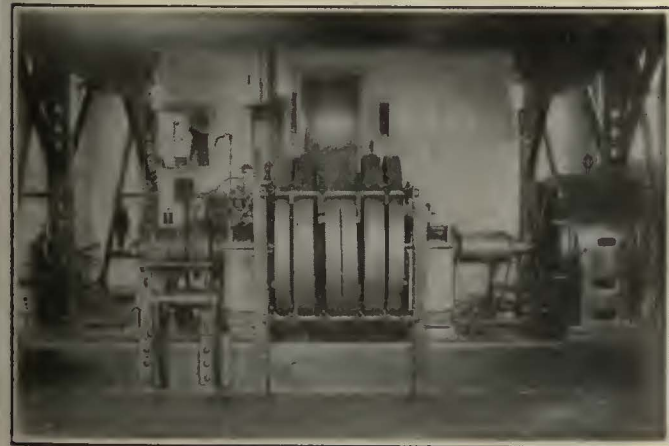
The other test, which extended over three months, was with a motor bus weighing 16,500 lb., which was run in neutral down a continuous 10 per cent grade for 2½ miles on Mount Tuscarora, near Chambersburg, Pa. On each run there was but one application of the brakes at not more than 12 lb., the pressure being by power and decreased only at times to allow the bus to maintain uniform speed. The run took about ten minutes.

The bus was fitted with 32 thermo-

couples read through potentiometers. These couples recorded the heat generated by friction and were placed at all points where it was thought heat measurements of this kind were desirable. Readings were taken at the top and foot of the grade.

The results are now being tabulated and will undoubtedly prove very instructive on the subject of the heat generated by brake friction of descending vehicles. They are to be made public by the manufacturers after being compiled. It is sufficient to say here that they indicated satisfactory results so far as the brake efficiency of the blocks was concerned, and that braking was accomplished without undue heating, without the production of smoke, odor or squeal and without appreciable deterioration of the brake material in the blocks, or excessive wear on the brake surface of the drum.

For outside brakes, a similar arrangement of blocks, but concave, will be used. The brake block can be applied to any brake arrangement, hand, foot or power.



At Left, Brake Shoe Testing Machine at Mahwah, N. J. At Right, Interior of Test Bus

In the right-hand view the two indicators at the extreme right show diaphragm pressure and travel. The third gage at the right shows the reservoir pressure. Time is also shown.

At the left, in the view of the interior of the test bus, is a record chart which shows time, revolutions of front wheel, distance run and brake application.

Association News & Discussions

Bus Competition to Tramways in Great Britain

Municipal Managers Greatly Exercised Over Inroads on Their Traffic
by Independents Operating Unregulated Bus Lines

LOSS of traffic by established electric railway companies to independent, unregulated and almost tax-free bus lines prevails in England and Scotland as it does in America. Indeed, comments on the situation contained in a number of papers by municipal tramway managers, presented at the annual meeting of the Municipal Tramways Association at Liverpool Sept. 8-10, indicate the condition to be even more acute there than in this country, even though a very large number of the tramway systems in the large cities in Great Britain are municipally owned. Even in Glasgow, where in 1924 the only buses were a very few which brought passengers into the city from places far beyond the tramway termini, the streets are now almost overrun with them, and they are seriously cutting into the traffic of the tramways.

Baillie Robert Laing, convener of the Glasgow Tramways Committee, estimated the present number of independent buses in Glasgow at 600. Most of them, he said, are owned in districts outside the city and pay very little in the way of taxes for their use of city streets, adding: "They are wearing the surface of our roads and streets; they are causing congestion; they are taking up a large part of the time and attention of the police force; they are maiming and killing our citizens, and, apparently, there is no redress." All main roads leading to the city now have both tramway service (provided by the municipality) and motor bus service (provided by independents).

Some of these motor buses are legally known as "coaches," which means they require no license, but cannot pick up and set down passengers within 5 miles of the general post office. Little attention is paid by them to the law on this subject, according to the speaker. Recently a number of the bus owners have been taking out licenses for "carriages," which allows them to do a local business and gives them a "stand" within the city. To compete with this motor bus service the speaker believed the tramcars would have to increase their speed to 20 m.p.h. or more and use more modern equipment, while the cities should try to secure more stringent requirements for motor bus operators.

Other papers somewhat along the same lines were presented by the deputy chairman of the Salford City Tramways Committee and the general manager of Birmingham Corporation

Tramways. The former strongly advocated the establishment by Parliament of transport commissioners to correlate local transportation services, whether municipal or privately owned, together with local area transport boards, which would initiate or authorize new lines and otherwise have somewhat similar powers to public utility commissions in this country, except that they would have equal control over municipal and private undertakings. Appeals from their decisions could be taken to the national commission. Such boards, said the speaker, would be a great help to many municipal tramway authorities who are intimidated by political influence from establishing an economic tramway fare. An interesting point brought out in this paper was that during the recent general strike in Great Britain, when no tramcars ran, the highway congestion was greater than ever and in some cases, in Manchester, the streets became well-nigh impassable.

Besides the governing boards suggested, the speaker urged greater at-

tention to proper street car design, particularly in the way of the development of smaller modern light-weight cars and automatic equipment for speeding up the loading and unloading of passengers.

The paper from Mr. Baker of Birmingham urged the same obligation on private bus operators with regard to fares, services and cheap fares for working classes that are imposed on municipal tramway undertakings. Birmingham has some municipal bus service, its latest orders being for a six-wheeled double-decker with covered top, the seating capacity being 66.

COUNCIL REPORT

The report of the Council (executive committee of the association) referred to the effort of the association to have Parliament correct the condition by which those municipalities that wish to operate motor buses are subject to the maximum of cost and delay, while private interests can secure these rights at practically no cost. A bill to secure such a change was introduced in Parliament, but was defeated by 133 to 128 votes, largely on the ground that it was a direct attack on private enterprise and an extension of municipal trading. The effort to secure a satisfactory change in the law will be renewed.

The general strike, which lasted from May 3 to May 12, affected every member of the association except Ayr. In many districts the harmony between employers and employed was quickly destroyed. On June 11 the Council decided that the national agreement was suspended, but recommended (1) that the provisions of the agreement should be followed and especially that no concessions should be granted beyond those contained in it; (2) that the clauses in the agreement relating to the schedule of weekly duty being not less than 44 hours and the guaranteed 48-hour week should be definitely suspended until the labor trouble had been cleared up and a further recommendation made, and (3) the break in service caused by the strike should not be considered as a break in service for the purpose of granting holidays.

The tax authorities have agreed that the annual allowance of 20 per cent on the written-down value for wear and tear of motor buses may be continued for a further period of five years, ending with 1929-30, and that the annual rate of depreciation on trackless trolleys may be taken as 15 per cent, with the statutory allowance for obsolescence of the unliquidated amount of capital expenditure (less scrap value) when the vehicle is disposed of. This proposal has been agreed to by the Council.

An essay composition was instituted in 1926 to cover the following

COMING MEETINGS OF

Electric Railway and Allied Associations

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. 11-13—American Management Association, annual convention, Hotel Statler, Cleveland, Ohio.

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

Nov. 5—American Electric Railway Association, Metropolitan Section, Engineering Societies Building, New York City, 8 p. m.

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

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

three subjects: (1) Finance, (2) traffic and (3) engineering. Forty-eight essays were submitted.

The Minister of Transport has issued an official notice that one-man front entrance and exit cars will be distinguished by red lettering "Front Entrance Car" and warning drivers of other vehicles about passing between such a car and the curb while the cars are receiving and discharging passengers. An effort to penalize automobile drivers who attempt to do so was defeated in the House of Lords on July 7, 1926.

PRIVATE RAILWAYS ALSO SUFFER

There are 242 tramway undertakings in Great Britain and of this number 170, with 1,859 miles of route, are owned by municipalities, while 72, with 746 miles of route, are owned by companies. The latter have suffered about as much as the municipal lines from unregulated bus competition, according to a paper at the last meeting of the Tramways and Light Railways Association. One remedy suggested by the speaker there was to require the buses to charge a fare somewhat higher than that on the street cars where their routes were parallel.

Colorado Association Discusses Railway Problems

PROBABLY no other industry has had to contend with so many changes in recent years as has the electric street railway, according to S. B. Ireland, vice-president and general manager of the St. Joseph Light, Heat & Power Company, St. Joseph, Mo. This statement is contained in an address on "Electric Street Railway Situation of To-Day," delivered at a convention of the Colorado Public Service Association at Glenwood Springs on Sept. 15. The changes enumerated by Mr. Ireland included the following: Overcoming the increased cost of labor and materials used in railway operation, brought about during the war; changes in contractual relations as to its rates of fare, which in most instances have been made on the old basis of cost, and serious inroads on the volume of its business, due to the development of the automobile and competition of the privately owned car and motor bus. Nevertheless, according to Mr. Ireland, no American city of any size up to date has been successful in substituting some other means of transportation.

In the smaller cities the number of passengers carried has decreased in the five-year period from 20 per cent to as high, in some instances, as 50 per cent. The patrons today are the thrifty and the less well-to-do people of the community, who either cannot afford their own private conveyances or see the fallacy in the economics of operating a private automobile for transportation, as compared to street railway transportation. Authorities should recognize the need of the service to these people and assent to higher fares where necessary, but particularly to the reduction or abolition of the unusual tax burdens and other assessments carried by the average street railway. These include paving taxes, franchise taxes and cost of sprinkling streets, snow removal,

and construction and maintenance of bridges and viaducts.

More than 10 per cent of the gross earnings of the average street railway, according to the speaker, is required to pay these taxes and special assessments. He also recommended laws to limit parking on congested streets.

In conclusion, the speaker declared that the individual company is negligent which does not adopt economies in operation, improve its service and engage in a program to eliminate special assessments and unusual burdens. These results can best be secured, he said, by educating the public to recognize the fairness and justice of the railway demands.

Railway Electrification at World Power Conference

RAILWAY electrification was a leading subject discussed at the sectional meeting of the World Power Conference recently held at Basle, Switzerland, on which reports were presented from most European countries, the United States and Japan.

William S. Murray, consulting engineer of New York, who represented this country, took a broad view of the situation. His main contention was that the use of electrical energy for railway operation has fallen far behind the use made of it for other purposes. The revolution of the transportation system has not kept pace with industrial production. About 80 per cent of the electrical energy produced in America is absorbed by industry, the railway demand being exceedingly small in comparison.

The need of the times, Mr. Murray insisted, is the acceptance of a standard type of power for railroads in place of the variety of systems now existing. What has been done hitherto is a mere experiment, as upon the electrified lines of the United States only 5 per cent of the total traffic tonnage is carried. Two opinions expressed in the paper were that in future the standard system of railway operation should be high-voltage direct current and that the railroad companies should procure power from public sources.

Colonel E. O'Brien, the reporter for Great Britain, dealt with the broad economic aspects of railway electrification. His report stated that even in countries where coal was cheap electrification could effect economies in cost of locomotive operation and maintenance of from 10 to 25 per cent and that a 50 per cent increase of speed could be effected without proportionate increase in cost. Other economic advantages referred to were reduction in cost of track and depot maintenance, generally improved conditions of operation and supplies of cheap energy for light and power. An important problem which has not yet been solved in England, Colonel O'Brien said, is whether the electric locomotive requires one or two men to operate it, and he thought that if this question could be satisfactorily settled railway electrification would receive a great stimulus.

Other reports described some existing installations, including those on the French, Dutch, German, Swiss and Swedish railways. The report on the

electrification of the Stockholm-Gothenburg section of the Swedish State Railways was particularly interesting.

American Management Association Annual Convention

Oct. 11-13

CLEVELAND will not be through with conventions when the A.E.R.A. delegation leaves. The American Management Association will hold its annual convention at the Hotel Statler on Oct. 11, 12 and 13. The sessions will be divided so as to include a comprehensive program of the subjects under the following heads: Trends in methods of distribution, budgeting technique, management organization, personnel administration and office management.

Particularly interesting to members of the association will be the discussion following the presentation of papers on a budget system—how to install and administer it—led by Prof. John MacDonald of New York University, who has made a very exhaustive research in this field. H. A. Fountain, treasurer Ohio Public Service Company, has also been active on the committee preparing information on this subject. Management's contribution to national welfare, another phase, will be presented in "Pre-Retirement Disposition of Older Employees," a contribution by Bennet F. Schaffler, employment manager Philadelphia Rapid Transit Company.

For further details and program, the secretary of the American Management Association may be addressed at 20 Vesey Street, New York City.

American Society of Civil Engineers Meets Oct. 4-9

BECAUSE of the presence of representatives of many foreign countries the 56th annual convention of the American Society of Civil Engineers will have an international character. The meeting will be held at Philadelphia during the Sesqui-Centennial Exposition. The program will be one of the most unusual that has been presented in the society's 74 years of existence. Philadelphia engineers who will be hosts of the occasion will help to make the entertainment of the visitors thoroughly enjoyable by visits to the many points of historical interest located in and around Philadelphia.

Gifford Pinchot, Governor of Pennsylvania, will deliver the opening address, to which a response will be made by Sir William Henry Ellis, president of the Institution of Civil Engineers, London, representing delegates of other nations. Discussion of transportation problems will have a place on the program. Of special interest to electric railway and bus men will be the following: Comparative lectures on the "History of Development of Road Building" in France and the United States by Thomas H. MacDonald, Chief Bureau of Public Roads, U. S. Department of Agriculture, Washington, D. C., and M. P. Le Gavrian, chief engineer of bridges and highways, Paris, France. Another phase of transportation will be the paper "Fifty Years Progress in

Bridge Building with Special Reference to the Delaware River Bridge," by Ralph Modjeski, chief engineer Delaware River Bridge Joint Commission and consulting engineer, New York.

City planning will be discussed in prepared papers by Harold M. Lewis, executive engineer, Regional Plan of New York and Its Environs, and by John Ihlder, manager, civic development department, Chamber of Commerce of the United States.

All members of the society, especially student members, are urged to attend and participate in all the events of the convention.

Will Tell How the Bus Fares in Railway Company

MEMBERS of the American Electric Railway Association have been specially invited to attend the Cleveland Section meeting and dinner of the Society of Automotive Engineers at the Hotel Cleveland, Monday, Oct. 4.

Pullman ticket or advise the hotel porter to pick up the Pullman ticket.

The convention board will supply the messengers to make this service effective. There will be no charge to the visitor for the service rendered at the Public Auditorium.

Monday Morning Session Advanced

CITY MANAGER HOPKINS of Cleveland, Ohio, will open the 45th annual convention of the A.E.R.A. with an address of welcome.

It has been decided to hold this meeting in the ballroom of the auditorium instead of the meeting room in the west wing. Also, the time of the meeting has been advanced from 9:45 a.m. to 9:30 a.m.

The Pittsburgh Railways' band, consisting of 40 pieces, will furnish the music for this meeting and also for the public inspection of the convention exhibits on Wednesday evening.

Tuesday Night Speaker

HON. W. IRVING GLOVER, Second Assistant Postmaster-General, in charge of the air mail service, has been chosen as the principal speaker at the Tuesday night, Oct. 5, session of the American Electric Railway Association.

Mr. Glover's subject will be "Civilization's Progress Parallels Transportation Development."

Lord Ashfield Prepares Address for Convention

LORD ASHFIELD, general manager of the London Underground group of rapid transit lines, tramways and motor bus services, has prepared an address which will be presented before the meeting of the American Association on Thursday morning, Oct. 7.

history, theory and principle of co-ordination as distinguished from other economic practices.

Open-Air Truck Exhibit Space Fills Long Needed Want

NEVER before has a convention of the American Electric Railway Association had such an ideal layout for the display of electric cars as is provided at Cleveland.

Electric railways and car builders have responded to the opportunity to display cars to an extent never realized before. Seven electric railways and eleven car builders will show the latest types of rolling stock developed.

Electric Railways

- Beaver Valley Traction Company. Chicago, North Shore & Milwaukee Railroad. Cleveland Railway. Northern Ohio Power & Light Company. Pittsburgh Railways. Tennessee Electric Power Company. United Railways & Electric Company of Baltimore.

Car Builders

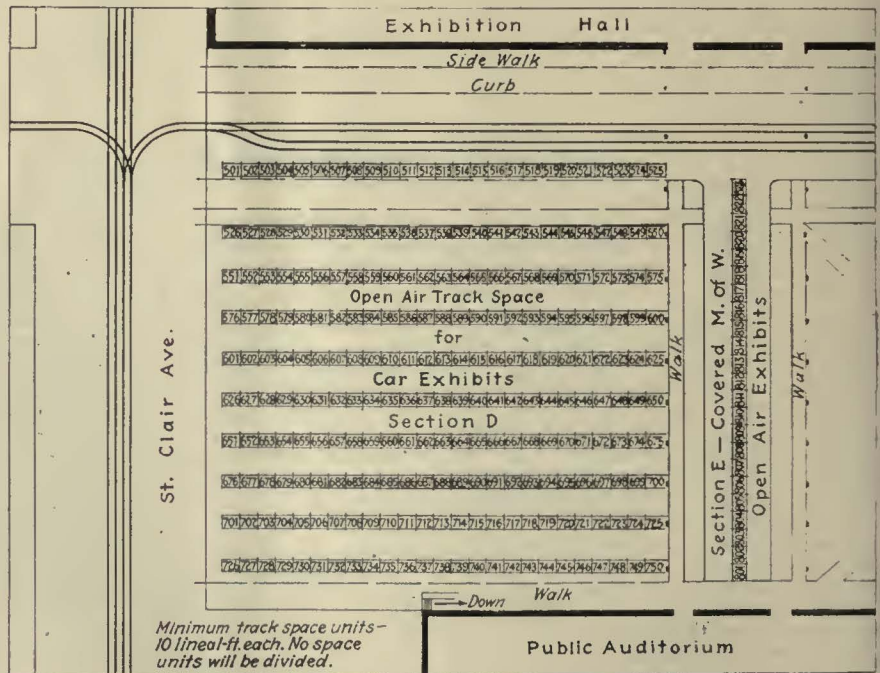
- American Car & Foundry Company. Atlas Car & Manufacturing Company. The J. G. Brill Company. Cincinnati Car Company. Cummings Car & Coach Company. Differential Steel Car Company. Light Weight Noiseless Electric Street Car Company. Phoenix Ice Machine Company. St. Louis Car Company. Perley A. Thomas Car Works. Universal Crane Company.

American Association News

Ample Arrangements for Validating Tickets

W. J. KENNEDY, manager of the Cleveland Chamber of Commerce has concluded arrangements with passenger departments of steam railroads entering Cleveland to maintain at Public Auditorium Oct. 5 to 8, inclusive, a railway information bureau at which delegates and visitors may have their railroad tickets validated for their return journey.

In accepting orders for Pullman space these representatives will use a special form which will pass from the railway bureau to the city offices of the several railroads, officials of which will indicate thereon the particular space assigned to the applicant.



Seven Electric Railways and Eleven Car Builders Will Exhibit Rolling Stock on These Tracks

The News of the Industry

Kansas City Franchise Extended

Twelve Years Added to Present Grant There to Permit Successor Company to Function

An ordinance was passed by the City Council of Kansas City, Mo., on Monday night, Sept. 27, granting a twelve-year extension to the present franchise of the Kansas City Railways. The franchise now becomes a 30-year grant. The purpose of the extension was to enable the new owner, the Kansas City Public Service Company, to refinance the property and sell long-time instead of short-time bonds. William G. Woolfolk, president of the proposed successor company, had urged an extension of the franchise as a necessary basis to insure sound initial financing.

In return for the extension of the grant the company has agreed to make a slight reduction in fares fixed in the measure at fifteen tickets for \$1, making a fare of 6½ cents. This is a saving of ½ of a cent on each fare, or about 5 per cent of the 7-cent fares. About 12½ per cent of the revenue passengers ride on the 7-cent fare. This means a saving of about \$48,000 annually to them alone. The extension ordinance also provides that the city may require the tickets for the reduced fares to be put on sale at such places and in such manner as future ordinances may designate.

ADDITIONAL SECURITIES MUST BE SOLD

In a recent letter to the Mayor, city manager and members of the Council Mr. Woolfolk outlined a program of service betterment to be started as soon as the new company obtains actual control of the property, probably some time in October. On the improvement program outlines, Mr. Woolfolk committed his associates "without reservation." The program includes the following:

To rebuild the Mill Creek trestle, which crosses Mill Creek Boulevard and is used by the company to provide freight service for the Westport district of Kansas City, Mo. The present trestle is of wood and provides only a narrow passage for automobile traffic.

To restore street cars to Argentine via the Twelfth Street bridge.

To restore street car service to the central industrial district.

To put all street paving between the car tracks in first-class condition.

To rebuild all defective and worn out tracks with modern construction.

To improve and expand bus service.

To start bus service between Kansas City, Mo., and Kansas City, Kan., across the intercity viaduct.

To modernize all rolling stock.

The cost of this work is estimated at \$6,600,000.

Although the new company will have at its command all the money turned over to it by the receivers, after all debts are paid, nevertheless this sum will be entirely inadequate for the extensive reconstruction program now outlined.

The vote in the Council on Sept. 27 was five to three, one Councilman being absent.

Francis M. Wilson, one of the receivers for the Kansas City Railways, Kansas City, Mo., on Sept. 22 declined with thanks the post offered him as vice-president in charge of public relations of the Kansas City Public Service Company, the proposed successor to the Kansas City Railways. The post, together with a voting trusteeship in the company, was offered Senator Wilson by William G. Woolfolk, president of the new company, who expressed deep regret at the Senator's unwillingness to accept the public relations post. No plans have been made for the selection of another man.

In his letter declining the offer, Sen-

ator Wilson gave expression to his desire to retire permanently from his connection with the local railways, with which he had served admirably as a receiver for more than six years. It is reported that he will resume his law practice, and rumor has it that he will again place his hat in the political ring, this time as a candidate for the Democratic nomination for Governor of Missouri in 1928.

There are to be five of the voting trustees, who will direct the operation of the new company for the stockholders during the readjustment period following the close of the present receivership. The four so far named are Melvin A. Traylor, J. K. Newman, George W. Davison and Powell C. Groner.

Wage Increase on Eastern Massachusetts

Arbitration Board Rejects Men's Plea for 12½ per Cent Increase, but Saddles Company with \$200,000 Additional Wage Expense Each Year

BY A MAJORITY report the special board of arbitration has increased the basic wage on the Eastern Massachusetts Street Railway system 1½ cents an hour and has reduced the working day to eight hours. The men's request for a 12½ per cent increase in wages was rejected on the ground that the board did not deem it warranted by the evidence introduced. What the board gave the men amounts to 67½ cents an hour for operators of one-man cars, who constitute more than 90 per cent of the employees, and 61½ cents an hour for the men on the two-man cars.

The extra cost of the award is estimated at \$200,000 a year, with \$50,000 back pay. To meet this the company has decided to increase its ticket fares, beginning Oct. 1. Cash fares will remain at 10 cents, but one coupon will be cut from each strip ticket. The company has fifteen operating districts and is selling strip tickets at different rates, according to the density of traffic, the range being from twelve tickets for \$1 to nineteen tickets for \$1. The twelve-ride ticket will be reduced to eleven for \$1, and the nineteen-ride ticket will be reduced to eighteen rides.

The award is made retroactive to May 1. It will run only until May 1, 1927. The eight-hour day also is made retroactive, so that the men will be paid extra for time worked in excess of eight hours since last May.

The finding is signed by Judge John C. Leggat, chairman, and by James H. Vahey, who represented the men. Fred A. Cummings, who was the arbitrator for the company, dissents from the report.

Fred A. Cummings, who dissents in behalf of the company, makes the following analysis of the results:

The basic rate of wages on this road for blue uniform men is 61 cents an hour. The differential for one-man operation is 5 cents and the basic rate is increased 1½ cents an hour. The 5-cent differential remains unchanged. The snowplow differential of 12 cents on top of the one-man car rate remains unchanged.

This award provides for time and one-half for all work performed over eight hours. It not only provides for time and one-half for all work over eight hours in the future but also time and one-half for all work over eight hours back to May 2, although the company was in no position to work the men on an eight-hour basis since that date, being bound by an agreement to work employees nine hours.

The award further provides that all schedule runs shall be no less than eight hours, which means that a number of blue uniform men must be paid eight hours for actual work performed between seven hours and seven hours and 59 minutes. In other words, the situation is that if the company wants the men on schedule runs less than eight hours it must pay eight hours, and if it does work the men eight hours it must pay 8½ hours, this latter penalty having been in existence prior to this award.

In snowplow work no overtime was paid on top of the one-man car differential of 5 cents plus snow rate differential of 12 cents until in the twelfth hour of a spread (by which is meant the span of time in which men might work), when an excess of 20 per cent was added, and in the thirteenth hour of the spread, when a 35 per cent excess was added. These excess rates still continue, but in addition to this, under the new award, after the eighth hour of work a snowplow worker receives the basic rate, plus the one-man car rate, plus the snow differential and one-half again the aggregate of the basic rate plus the one-man car rate plus the snow differential, which amounts to \$1.19 an hour.

New time tables on the eight-hour basis are being prepared and will be put into effect within a few days. Employees in repair shops in Brockton and Chelsea and miscellaneous carhouse employees and trackmen throughout the system will go on an eight-hour basis possibly within 48 hours.

The new agreement expires May 1, 1927, and in readjusting fares the company must obtain not only sufficient money to pay current expenses at the new basic rate of wages and time and one-half penalty, but also must meet the additional burdens imposed by the award for the last five months.

To attempt to cover the cost of this

award it will be necessary to increase fares in every operating district. These new rates will go into effect on or about Oct. 1, 1926.

The wage rates for trainmen are as follows:

	New Rates* Effective 5/1/26-5/1/27, Cents per Hour	Old Rates* Effective 5/1/25-4/30/26, Cents per Hour
First three months.....	57	55½
Next nine months.....	60	58½
Thereafter.....	62½	61

* One-man car operators, 5 cents per hour extra.

The wage rates for bus men are as follows:

	New Rates Effective 5/1/26-5/1/27, Cents per Hour	Old Rates Effective 5/1/25-4/30/26, Cents per Hour
First three months.....	62	60½
Next nine months.....	65	63½
Thereafter.....	67½	66

Miles of bus route: 134.58.

New Yorkers Seek Information on Subway Policy

A constructive and significant step was taken on Sept. 29 when the Citizens' Union of New York City, N. Y., sent a letter to Mayor Walker seeking advice on the policy for building and operating new subways. Up to date no definite policy for the transportation problem has been announced by the Mayor, although he has indicated from time to time that a solution was in the making and would be announced just as soon as he was certain it was practicable. William J. Schieffelin, president of the Citizens' Union, who wrote the letter to the city's chief official, suggested four things as follows:

A single system, rather than a separate city-owned system which would be a competitor against the city's present interest in the old subways.

Radical revision of the dual subway contracts in favor of the city.

Reorganization of existing transit companies under one head as proposed by the old Transit Commission five years ago.

Higher fares on express routes only if, after these steps have been taken, a 5-cent fare still is inadequate.

In his letter Mr. Schieffelin reviewed the financial aspects of the matter. It was his conclusion that until the subway policy had been determined the solution of other city problems would naturally be impeded.

Revival Work Continues in Miami

Everybody in the organization of the Miami Beach Railway, Miami Beach, Fla., came through the recent disaster safely, but the property and equipment were damaged. Most of the cars were 3 ft. under salt water for six hours. This meant complete baking of all electrical equipment. Many wires were down, but service in the city was restored on Sunday, Sept. 26. The line to Miami Beach was washed away and many of the rails and ties had to be fished out of Biscayne Bay. On Sept. 24 it appeared unlikely that service to the beach would be restored for another ten days.

Of course other conditions were bad. There was no water for two days, but the Florida Power & Light Company did excellent work in connecting up hospitals and hotels for first aid purposes.

Lisman Plan Dismissed

Chicago Traction Settlement Proposals Attacked—Another Plan Is Offered

Awaiting presentation to the Chicago City Council of the details of the plans of New York bankers, represented by John M. Harlan and Frederick Lisman, for the solution of Chicago's transportation problems, Aldermen and local traction representatives continue to shoot holes in the proposal, while Judge Harlan and Mr. Lisman are kept busy defending their scheme.

Alderman Arthur Albert, one of the most violent opponents of the plan, made the Easterners' offer of \$50,000,000 for added transit facilities appear so unfavorable that the petitioners have virtually agreed to amend their proposal in this respect. Mr. Albert's persistent queries revealed that after the \$50,000,000 securities had been sold at 85 cents on the dollar, a 10 per cent construction profit and a \$5,000,000 stabilization fund had been deducted from the original amount only \$33,250,000 would actually be available for extensions and new equipment.

Although he agreed that the 10 per cent construction profit would probably be considered a legal charge, Corporation Counsel Busch said that the most severely criticised feature of the 1907 ordinance was a provision which allows 10 per cent construction profit and 5 per cent as the cost of money. "It is illogical to pay 10 per cent construction profit when the company does the work itself," he added.

Intimating that the present bondholders of the Chicago Surface Lines would pocket an estimated \$13,900,000 annually after the ordinance expires next February, Judge Harlan proceeded to quiz Leonard A. Busby, president of the Chicago City Railway, about the plans of his company in event of receivership next February. He wanted to know if the Chicago Surface Lines would continue to pay 55 per cent of its net earnings, or \$2,100,000 annually to the city, if it would spend \$7,000,000 for repairs and maintenance and if it would put \$4,800,000 into the renewal and depreciation fund.

Mr. Busby was emphatic in his answer that "the greatest asset of the company is good will." "Why should we destroy it by refusing to make that payment?" he asked. "I shall certainly recommend to my directorate that these payments be continued."

One of the main features of the New York bankers' plan is that it seeks only a twenty-year franchise and requires no special legislation. Mr. Harlan believes that a complete, permanent and progressive settlement of the surface transportation problem can be made under existing law, and that his plan means speed and progress, while waiting for legislation means delay. Local bankers and traction representatives, on the other hand, are unalterably opposed to an ordinance which becomes ineffective, as does the Harlan proposal, unless a city commission is created.

Still another plan to solve the city of Chicago's transportation problem was reported on Sept. 30. The plan was

presented to Alderman McDonnough, chairman of the City Council committee on local transportation, by Harry R. Miller and Nicholas J. Shorn of Detroit. They revealed as their financial sponsor William L. Davis & Company, Detroit banking firm. The plan calls for coordination between buses and surface cars and the building of a downtown subway.

Subways Needed for St. Louis

A special committee of the St. Louis Board of Aldermen appointed to study the city's rapid transit needs has made public the first part of its report. It deals with findings indicating the need for subways to speed up the city's transportation. The committee does not make any final recommendations about subways, but merely confines itself to the need and feasibility of subways.

The committee has also released the second section of its report. The final sections to be released will contain specific recommendations regarding rapid transit. It is known, however, the committee favors an underground system at once for downtown St. Louis and an extension later into the outlying sections. The committee has found that St. Louis can afford to and should build subways. It estimates that subways can be provided at a cost of not to exceed 2 cents per capita a day.

The first section of its report also predicts that in 1950 the city will have a population of 1,505,800 persons in its metropolitan district on both sides of the Mississippi River at St. Louis.

It further declares that a subway is needed if downtown property values are to be maintained. These now represent 22 per cent of the city's assessed valuation.

It is clear, the report asserts, that street cars must be taken from the surface of business streets downtown and in this connection there is mention of underground sidewalks paralleling the subways to provide for crowds.

Order Restored in Baltimore

After several days, during which most of the traffic regulations in Baltimore were ineffective, the Baltimore City Council has passed an ordinance which restores all the rules which had been in effect. The action of the Council followed an opinion handed down by Judge Eugene O'Dunne, in the Criminal Court, holding that power given the Police Commissioner to promulgate rules and regulations was unconstitutional. This power had been granted by the Maryland General Assembly in 1924 and Judge O'Dunne held that it violated the state home rule amendment. As soon as the opinion was given conditions became chaotic, as only a few laws were left in effect, these being measures that had been passed by the City Council before 1924. Since that date all the rules have been made by the Police Commissioner. In order to clear the situation the City Council passed an ordinance which embodied all the rules made by the Police Commissioner. Officials, however, intend to carry the case ruled upon by Judge O'Dunne to the State Court of Appeals.

Jamestown Fare Rejected

The Public Service Commission has rejected the schedule of fares proposed by the Jamestown Street Railway and the Jamestown Motor Bus Transportation Company, Jamestown, N. Y., which provides for an increase effective Oct. 1.

The companies proposed to increase one-way fares between points in the city of Jamestown from 8 to 10 cents and to increase ticket fares from five tickets for 35 cents to three tickets for 25 cents. It was also proposed to sell ten tickets for 75 cents and to sell weekly card passes at the rate of \$1 each to be good by the holder on either line. The railway lines connect the villages of Celeron, Falconer and Lakewood and the town of Ellicott and the hamlet of Ashville. The company also proposed to increase fares between Jamestown and these villages from 8 to 10 cents, and from 16 to 20 cents between Jamestown and Ashville.

The commission granted an 8-cent fare on June 22, 1920, and provided for the sale of tickets at reduced rates. It ruled that until it was shown that the present rate was not adequate this order must remain in effect.

South Shore Freight Trains Make Record

Freight service on the Chicago, South Shore & South Bend Railroad has shown a remarkable improvement since the company's re-electrification and track reconstruction program was completed during the past summer. A check on the arriving time of the morning freight train at South Bend from Chicago throughout the month of August reveals that in every instance except three, or approximately 97 per cent of the time, the train arrived before 6 a.m. On two of these occasions the train was less than 30 minutes late. Two months ago more than 68 per cent of the trains arrived later than 6 o'clock. Fast overnight service, punctual delivery and conveniently located receiving stations in Chicago are the main features upon which the new and improved freight service is being built. The line has already shown a considerable gain in traffic.

Seattle Council Favors Commission's Transit Plan

In a round-table discussion with William Pitt Trimble, head of the City Planning Commission, which has spent a year in investigating transit problems in Seattle, Wash., the City Council expressed itself in favor of the proposed rapid transit system recommended by the commission, provided it could be shown that it would be a good investment and not add too much to the railway's financial burdens. The commission has outlined a combination system of surface lines, subway and elevated lines, estimated to cost \$4,000,000, and providing a rapid transit line connecting the region north of the Lake Washington canal with the downtown section of the city and south and west Seattle.

The Council expressed more interest in ways and means of financing a rapid

transit system than in the physical aspects of the case.

According to figures of Mr. Trimble, the average daily loss of passengers in 1925, compared with 1924, was more than 5,000, while so far this year the loss, compared with 1925, has been 7,675 a day.

Beaver County Sends Car and Girls to Cleveland

At the invitation of the exhibit committee, the Beaver Valley Traction Company, New Brighton, Pa., is sending its industrial art advertising car to the Cleveland convention next week. Or, rather, the Beaver Valley manufacturers and citizens are sending the car, for the entire expense is being borne by the various communities in the valley. This was brought about through the medium of a beauty contest, sponsored by the railway and the Beaver Falls Chamber of Commerce, to choose the four young ladies in the valley possessing the greatest intelligence, personality and beauty. To nominate and vote for the contestants in this race it was necessary to contribute hard coin of the realm and a very imposing fund soon came into existence.

Not only will the industrial art car be on hand to illustrate the progressiveness of the Beaver Valley but the four contest winners, who were selected from a field of nearly 200 entrants and a narrowed group of 26, chosen by popular vote, will also be present at the convention to welcome all who visit the car and to distribute booklets which will give complete information on the advantages of Beaver County. These young ladies were jointly awarded the title "Miss Beaver Valley" by the judges of the contest. They are the Misses Betty Thomas of Monaca, Mary L. Guy of New Brighton, Eleanor Murphy of Beaver Falls and Mrs. George Weinman of Beaver Falls. Accompanying them will be Mrs. Loretta Werner, who will act as chaperon.

A complete description of the industrial art trolley car was published in the issue of ELECTRIC RAILWAY JOURNAL for June 12, 1926, under the title "Beaver Valley Enters the World of Art." It was the fact that so many of the industries of the valley were represented among the paintings on the sides of the car that suggested to Clinton D. Smith, general manager of the Beaver Valley Traction Company, the advisability of sending the car to the convention as a graphic illustration of Beaver County's desirability as a location for industrial activity.

On its way to Cleveland the car will pass over five different electric railway lines and, in addition, will be operated over many of the lines in Cleveland, in order that the widest publicity may be given to this traveling exhibit. It is planned to introduce the "Misses Beaver Valley" to the entire convention during one of the American Association sessions and they will also be on hand for all of the social and entertainment features of the convention. In addition to their expenses, the young ladies will receive a generous daily emolument and are already being made the recipients of many gifts and prizes from local stores and firms in the Beaver Valley.

New Fares at Buffalo Denied

The New York State Public Service Commission has rejected the new tariff filed by the International Railway, Buffalo, for a 10-cent fare in Buffalo and proportionate increases in Niagara Falls, Lockport and on its interurban lines in western New York. Instead of filing an application for permission to increase its fares, which is the usual practice within the state, the company merely filed a new tariff schedule saying it would become effective Oct. 16. Counsel for the International Railway indicated that he was paving the way for an appeal to the United States District Court for the western district of New York at Buffalo from the decision of the state utilities board. The company will contend that the present rate of fare is insufficient to meet expenses and is confiscatory.

The lines of the International Railway reach across the border into the Dominion of Canada, and the company will contend that the commission lacks authority to fix fares.

Extension of One-Man Service Authorized in Milwaukee

Formal order has been issued by the Wisconsin Railroad Commission authorizing the Milwaukee Electric Railway & Light Company to operate one-man cars on its Oakland-Delaware line. The one-man cars to be installed are similar to those now operating on the Walnut and 35th Street lines.

In its order the commission declared that permission for the one-man cars was granted on the basis of the company's promise to increase the service 20 per cent, together with the fact that previous developments had shown that one-man cars would result in improved service for this line. In his arguments before commission, city and civic officials, R. H. Pinkley, assistant general manager, declared that this line was one of the lightest traveled in the city.

More Passengers in Missouri

An increase of 25,000,000 passengers for the first six months of this year over the similar period last year is reported by the sixteen electric railways affiliated with the Missouri Committee on Public Utility Information.

In commenting on this trend in traffic a report by the Missouri Committee on Public Utility Information states:

Despite the fact that the street railways in Missouri carried 50,000,000 fewer passengers in 1925 than in 1921, the increase for the six months ended June 30, this year, indicates that automobile congestion in the downtown districts, expense of operation and the increased difficulty in locating parking space in the downtown sections are resulting in the increased number of street car riders.

Fare Advance in Portsmouth

The Virginia State Corporation Commission has granted the Virginia Electric & Power Company's petition to put into effect a 7-cent cash fare, with tokens at four for 25 cents and school tickets at half cash fare, on its Portsmouth division. There was no opposition to the petition. The straight fare was 6 cents.

News Notes

P.R.T. Men Give \$20,000 to Florida.—The Co-operative Council of the Philadelphia Rapid Transit Company, Philadelphia, Pa., recently approved payment to the Citizens' Emergency Relief Committee of a sum equal to \$1 for every employee and an equal amount to be paid by the management to the Florida relief fund. The resolution, which increased the Florida fund by \$20,000, was forwarded to J. Franklin McFadden, chairman of the Citizens' Emergency Relief Committee, Southeastern Chapter, American Red Cross.

Trial Period of Five-Cent Fare Extended.—The Pittsburgh Railways, Pittsburgh, Pa., has extended the time limit of the 5-cent fare on its line between 62d Street and Butler Street and Sharpsburg and Aspinwall for another 60 days or possibly longer. In announcing this step the company said that in view of the fact that no definite appraisal of the effectiveness of the 5-cent car fare had been made possible during the 60 days it has been in effect, a longer period of time would be taken to make a fair test.

Employees Compromise.—Trainmen of the Illinois Power & Light Corporation, Bloomington, Ill., voted on Sept. 16 to accept an increase of 2½ cents an hour in their wages. They had demanded 5 cents. The new scale is retroactive to July 2 and will be effective for two years.

Proposes Rapid Transit Over Steam Line in Chicago.—Rapid transit service for areas in Chicago, Ill., not now served would be provided under a plan which the City Council ordered under investigation on Sept. 17. Alderman John Toman, author of the proposal, suggested that electrically driven cars be operated over steam railway lines radiating from the Loop district. He said that only a small expense would be involved in providing for the supplementary service.

Reduced Tickets for School Children.—R. Bly Wagner, manager of the Pine Bluff Company, Pine Bluff, Ark., announced recently that street car tickets in books of 20 for 50 cents per book, or at the rate of 2½ cents per trip, are being issued for the use of the school children. On account of the low fare rate, use of these tickets is restricted to children attending public and private grammar and high schools, and are good any time between the hours of 7 a.m. and 6 p.m.

Fares Increased in Johnson City.—Increase of 2 cents in fare by the Johnson City Traction Corporation, Johnson City, Tenn., will be allowed by the State Public Utilities Commission as soon as the company puts into service four new one-man-operated cars. The new fare will be 7 cents. The company asked to be allowed 8 cents. Despite an inquiry by the commission as to overhead expenses, W. H. Baldwin, vice-president of the Tennessee Eastern

Electric Company, which owns the traction company, and other officials convinced the commission that even elimination of the objectionable items would not enable the company to make a profit.

Seeks to Operate One-Man Cars.—The Eastern New York Utilities Corporation, formerly known as the Albany Southern Railroad, and operating an electric railway between Albany and Hudson, N. Y., has filed with the Public Service Commission a petition to operate its lines with one-man trolley cars, changing the present type of car for this purpose. A public hearing will be held on this application later.

Men Restrained from Joining Union.—Employees of the Interborough Rapid Transit Company, New York, N. Y., who join the Amalgamated Association, which is affiliated with the American Federation of Labor, will be subject to prompt dismissal. Frank A. Hedley, president and general manager of the company, says that membership in the Interborough Brotherhood carries with it a pledge not to join any other union and that this pledge is part of the contract of employment. His statement to the men was called forth by the effort of organizers of the Amalgamated to obtain recruits from the Interborough union, particularly from former members of the Consolidated Railroad Workers of Greater New York.

Safety Work Bonus to Memphis Men.—Extra pay amounting to \$6,387 is to be distributed shortly to motormen and conductors of the Memphis Street Railway, Memphis, Tenn., this amount representing savings effected by reducing accident costs during June, July and August. Under the plan the company divides with the men the amount saved each month, but distributes the awards at the end of each quarter. Records of the company over a period of years showed that 4.25 per cent of the gross receipts had been required for accident costs.

Parking Prohibited.—Intercity bus lines operated into Madison, Wis., by electric railways and independent owners are prohibited, under an ordinance just enacted by the Common Council, from parking on any street on the Capitol Square for a period longer than it actually requires to load and unload passengers. The same ordinance provides that after Jan. 1, 1928, no bus station will be allowed within two blocks of the Capitol Square where it is necessary to take on and discharge passengers in the street.

Courses for P.R.T. Men.—The Philadelphia Rapid Transit Company, Philadelphia, Pa., announced recently that it would provide educational courses during the fall and winter to give employees an opportunity for a "broader understanding of the principles underlying the company's co-ordinated system and its varied activities." The courses will be under the direction of officials of Mitten Management, Inc., and will include a wide variety of subjects under the general headings as follows: "Public Relations with a Background of Transportation and Public Utility Economics," and "Handling Men."

Foreign News

Subway for Japan

Tokyo will be the first city of the Far East to have a subway. This new underground road will be constructed in a manner similar to the plan used in New York City in that it is open cut and roofed over with steel, the tube being square and located a comparatively short distance below the surface of the street. The civil engineering work of this link, which will connect two very densely populated sections of Tokyo, has been about 50 per cent completed. The first rolling stock will include ten steel cars, each of which at first will be provided with two motors of 120-hp. rating. The motors are being furnished by the International General Electric Company, through Mitsui Bussan Kaisha. It is one of ten sections projected for Tokyo, this section being constructed by the privately owned Tokyo Underground Railway. The nine other sections may be constructed by the Tokyo municipality in the future.

Number of London Buses Reduced.—In a statement issued at the House of Commons recently the number of licensed omnibuses in the Metropolitan area is shown for Jan. 31 and June 30 of the present year. The figures are:

	London General Omnibus Co. and Associated Companies	Independent Proprietors	Total
Jan. 31, 1926	4,718	611	5,329
June 30, 1926	4,571*	474	5,045

*Including 99 omnibuses now controlled by the L. G. O. Co. which on Jan. 31 were independent.

Tram Cars May Replace Gondolas.—If proposed plans are approved by the city officials of Venice, to unite five other communes with the city by bridges, over which electric cars will be operated, it will mean that the tramcar will practically replace the gondola. This method of transportation is now being advocated by the Cabinet. The arrangement proposes to connect Venice and the communes of Mestre, Tavano, Chirignago, Zellarino and Fusino.

London Underground Has Longest Subway.—Free passage was given to 3,000 people on the opening day of the Morden extension of the City & South London Railway, Sept. 13. This extension of 5½ miles gives to this property first claim to the longest underground railway in the world. It is 16½ miles long, connecting North and South London from Golders Green to Morden, and takes 53 minutes running time. The other route of the tunnel is by way of Charing Cross, which is 15 miles long and takes 49 minutes. The area covered will serve 2,500,000 people. If the line is to pay, however, at least 12,000,000 passengers must use it yearly. At the southern terminus there has been erected a large garage, by the company for the accommodation of automobile owners who wish to leave their cars and continue the journey by tube.

Recent Bus Developments

Jitney Proposal Defeated in Detroit

Electors Support Contention of City Officials that Municipal Railway Should Have Monopoly

Another blow was dealt the jitney operators in Detroit, Mich., at the election on Sept. 14 when the people defeated the initiatory ordinance proposed by the jitney organizations for regulating the operation of jitneys on Detroit streets. The amendment which was defeated would have allowed 500 jitneys to operate under city license on Woodward, Jefferson and Grand River Avenues and Fort Street.

An active campaign to defeat the amendment at the polls was waged by Mayor Smith and other administration officials, but the defeat of the proposed amendment is not considered as the final action by the jitney drivers. In the meantime, pending the hearing before the United States Supreme Court, the jitneys are operating as usual. Before the ballot, the Corporation Counsel proposed that a stipulation be signed to the effect that both the jitney organizations and the city officials would abide by the decision made by the voters. Edward N. Barnard, attorney for the jitney drivers, would not agree to the proposal.

The Corporation Counsel's office has engaged New York counsel to look after the city's interest when the case is reviewed before the U. S. Supreme Court.

New motor coach service has been started by the Department of Street Railways on a five-minute schedule on Woodward Avenue to combat the jitneys. A 10-cent fare is charged for passengers riding between the Detroit River and Six-Mile road, with the added inducement of free transfers to railway lines. These coaches are single-deck, 21-passenger buses which stop at all street crossings to take on or discharge passengers. With these coaches a comfortable ride is offered at a lower rate of fare than the jitneys charge.

It was pointed out by the Street Railway Commission that the jitneys take from the municipal street railway system a large portion of the most profitable central traffic in Detroit without relieving the D. S. R. of a single line of its unprofitable routes, many of which must be operated at a loss. The principle of operation embracing the use of the profitable downtown lines to support the lightly traveled outlying lines obviously cannot be applied with jitney competition.

The recent decision at the polls is looked upon by the city officials as a renewed pledge of faith in municipal ownership. The proposed amendment to the ordinance was considered an attempt to wrest from the people the control of city streets, for which a 30-year battle was fought.

It was stated by the commission that

while the jitneys serve only four downtown lines, the Department of Street Railways operates 55 lines, for service, not profit. In depriving the city of \$1,000,000 in revenue last year, the jitneys reduced the D. S. R. revenues by an amount sufficient to purchase 72 new street cars or 75 double-deck, 60-passenger gas-electric motor coaches similar to the 50 which the city has purchased and which are now being delivered, under the terms of the contract with the bus manufacturers.

It was brought to the attention of the people that extensions of city railway and motor coach service to outlying sections and the continuation of the present 6-cent fare depended largely on the elimination of the jitney.

Baseball Enthusiasts Travel by Bus in Boston

Ten buses were chartered from the Boston Elevated Railway during the recent baseball season to enable employees of the Houghton & Dutton Company, Boston, to reach the Fenway Park baseball grounds quickly without encroaching upon track capacity of the local



Boston Fans Handled by Buses Which Were Specially Chartered from the Elevated

railway. There is a department store baseball league in Boston the games of which begin in the late afternoon, and in order to take advantage of daylight saving and reach the grounds as soon as possible after the stores close, the bus was utilized. The Houghton & Dutton store is located about half way between two busy subway stations crowded with traffic during the late afternoon, and the use of the bus in this case was advantageous from every viewpoint. The accompanying illustration was taken from the Boston office of the ELECTRIC RAILWAY JOURNAL in Tremont Temple.

Menominee Favors Bus—Marinette Issue Pending

The Menominee, Mich., Common Council has expressed itself in favor of the installation of bus service in that city. As the first step in this direction the Council has instructed the franchise committee to investigate the practicability of offering a franchise to a bus company which would guarantee adequate service, preferably the Menominee & Marinette Light & Traction Company.

Contrary to the stand taken by the Council of Menominee, the Council of Marinette, at a meeting in August, refused to allow the railway to use buses on a three months basis in an attempt to wipe out the deficit which it is now experiencing in the operation of its twin city street car line. At a later meeting, however, the Council unanimously passed a resolution authorizing Councilmen to visit the bus systems operated by the railways in Manitowoc and Sheboygan.

After the refusal of above-mentioned Council to permit bus service on a trial basis, the company applied to the Railroad Commission for permission to increase its railway fares. Should the commission approve the proposed scale, cash fares will be 10 cents instead of 7, tickets three for 25 cents instead of ten for 50 and rates for children between four and twelve years of age from 4 to 5 cents. The question of bus operation will be deferred pending the return of the Aldermen from their tour of investigation.

Another Stage in Buffalo's Municipal Bus Venture

Mayor Frank X. Schwab of Buffalo, N. Y., was authorized by the City Council recently to invite corporations to operate buses within the city under the terms of a contract which provides for the payment of 20 cents per mile of operation, the money to apply on the purchase price of the buses by the city. Details of the proposed contracts were not revealed at the Council session, but the Mayor promised the Council he would submit within the next two weeks the names of the companies which will operate buses under the new form of contract. Mayor Schwab said he had no intention of giving up his municipal bus venture.

Questioned by other members of the City Council, Mayor Schwab said that the \$10,000 which the Council appropriated for initial operating expenses of the municipal bus routes and which already had been paid to John C. Montana, who operates interurban buses in western New York, and to the White Motor Company, had not been lost to the city and would apply on the purchase price of the buses if the city voted to buy them. The new form of contract under which the city would pay 20 cents per mile of operation, the Mayor said, was modeled after a bus contract made in the city of Detroit when municipal bus lines were first operated.

Besides asking that he be given authority to enter into a new bus contract, the Mayor advocated the establishment of a zone system of fare payment.

Stagger Arrangement in Neenah

A three-cornered agreement was finally reached by officials of the city of Neenah, Wis., the Railroad Commission and bus transportation companies at a recent conference held in Neenah for the purpose of regulating the operation of interurbans and buses in the hope of solving the traffic problem. A one month's trial will be made beginning Oct. 1 to regulate all transportation lines. This will be attempted by having buses of the traction company leave at five minutes after and 25 minutes before each hour and buses of the Homan Bus Company leave 25 minutes after and five minutes before each hour, while the Neenah-Appleton interurban cars will remain on the same schedule of fifteen minutes before and after each hour. A ten-minute service will thus be provided between Neenah and Appleton. A system of skip stops will also be introduced to cut down the number of stops by buses. At present buses stop anywhere.

Bus Operator Seeks to Use Weekly Pass.—Application for the use of the weekly pass was made before the Public Utilities Commission at Hartford, Conn., on Sept. 28 by John T. L. Hubbard, counsel for the Lordship Railway. The latter operates bus lines between Bridgeport and the communities of Lordship Park and Avon Park. Arguments in support of the application were made by Mr. Hubbard, Edwin M. Walker, president Schenectady Railway, and Walter Jackson. W. J. Flickinger, vice-president of the Connecticut Company, and various jitney operators protested the application. The commission reserved decision.

Abandons Bus Line.—The Milwaukee Electric Railway & Light Company, Milwaukee, Wis., discontinued the operation of its Beaver Dam bus line, effective Oct. 1. Unlike its other bus lines running into the lake regions, the Beaver Dam line was not heavily patronized during the busiest summer months.

Buses on Trial for One Year.—The Peninsular Railway has been authorized by the Railroad Commission to continue experimental operation of buses in the city of Palo Alto, Cal., for one year from Sept. 28, 1926. The petition is granted on condition that such service may be discontinued on 90 days notice if it be found that the revenues are insufficient to warrant operating. The bus service in question was authorized by the Railroad Commission a year ago as a substitute for the electric railway line abandoned at that time. The railway had found after one year of operation that the service was not paying its way.

Objects to Bus Application.—The International Railway, Buffalo, N. Y., appeared recently before Public Service Commissioner Pooley in opposition to the application of John F. Burke, receiver for the Hamburg Railway, Buffalo, for permission to operate buses between Hamburg and Buffalo to amplify the company's service. The company seeks to operate two passenger buses on an hourly schedule between Hamburg and Lafayette Square at Main

Street in Buffalo, charging a 40-cent fare to Hamburg and 20-cent fare to Lackawanna and zone rates between these two points. The International Railway complained that the proposed bus line would take passengers to Lackawanna in competition with the South Park car line. Decision by the commission was reserved.

Bus Line Authorized.—The Charleston Interurban Railroad was granted a permit recently by the City Council of Charleston, W. Va., to operate on Piedmont Road to Greenbrier Street and through the residential thoroughfares north of Washington Street. The new bus line, which will be started in the near future, will have its terminal at the corner of State and Summers Streets.

Bus Certificate Granted.—The Illinois Commerce Commission on Sept. 22 granted the Alton, Granite & St. Louis Traction Company a certificate of convenience and necessity to operate buses connecting East St. Louis, National City, Brooklyn, Venice, Madison, Granite City and Nameoki to Mitchell, Ill., and from Mitchell to Hartford, Woodriver, East Alton and Alton. At the same time the commission dismissed the applications of the Pioneer Motor Transportation Company, Prairie State Bus Line and Superior Motor Bus Company for certificates to serve the same territory.

Would Operate in Binghamton.—The Binghamton Railway Bus Lines, Inc., has filed a petition with the Public Service Commission for permission to operate buses in the city of Binghamton, N. Y., and adjoining territory. The company proposes a 30-minute schedule from 6 a.m. to 12 p.m. weekdays and 7 a.m. to 12 p.m. on Sundays. The fare is to be 7 cents. Transfers will be permitted from the bus line to the street cars of the Binghamton Railway under the same rules as prevail at present. A public hearing will be held on the application.

Buses Used on Extension.—The Key System Transit Company has applied to the California Railroad Commission for a certificate to operate an extension of its Thousand Oaks line. Buses will be used between the intersection of the Alameda and Monterey Avenue and the intersections of Colusa Avenue and Fairmont Avenue and intermediate points in the city of Berkeley.

Would Substitute Buses.—The Bus Transportation Company, subsidiary of the Denver Tramway, Denver, Col., has asked for a permit to operate buses between the western city limits of Denver and Arvada, Col. The tramway desires to operate buses because its electric lines in this vicinity do not pay.

Suburban Line Denied Bus Grant.—The Pennsylvania Public Service Commission recently refused a petition for a certificate of public convenience to the Southern Pennsylvania Bus Company for the right to operate a bus line between Chester and Darby. The applicant is a subsidiary of the Southern Pennsylvania Traction Company, Chester, Pa., which operates a double-track railway between these points. Various communities along the line protested against the bus line, claiming that the

roads are already heavily traveled traffic arteries. The commission in its decision said that although the terminal points were important centers they were now served not only by a number of railway lines but by steam lines as well. It was possible, the commission felt, in this rapidly growing territory that conditions might change where bus service would become necessary in addition to existing facilities, but at the present time the commission was not convinced that public necessity required the additional service.

Franchise Canceled—Buses to Be Operated.—The City Council of Vancouver, Wash., has received authorization to let an exclusive franchise for bus lines to be operated to the district recently served by street cars. Applications for such service will be received after Oct. 1. Earl S. Nelson, president of the Clark County Development Company, which corporation managed the railway lines, has signed on behalf of his company an agreement reached with the City Council relative to repairing streets on which the tracks of the Vancouver electric railway are located. With this agreement signed the Council approved the ordinance canceling the franchise held by the company. Service of street cars on the Orchards-Sifton line as previously reported was to cease on Oct. 1. Other lines are to continue until the middle of October or until suitable bus service can be instituted.

Buses and Cars to the Fair.—The Reading Transit Bus Company, an associate of the Reading Transit Company, Reading, Pa., operated buses in conjunction with railway cars to give patrons the advantage of direct transportation between their homes and the Reading Fair Grounds. The charge on the buses was 10 cents, while the regular 7-cent fare continued on the cars. Persons wishing to avail themselves of the railway and bus service in visiting the fair, which opened on Sept. 14, were able to make the trip from their homes direct to the entrance gates for a fare of 17 cents.

Would Operate in Troy.—The Public Service Commission held a hearing on Sept. 22 on the application of the Capitol District Transportation Company, Inc., a subsidiary of the United Traction Company, for a certificate to operate a bus line in the city of Troy. The bus company proposes to operate over the so-called Albia division of the traction company, which the company at the same time petitioned to abandon. The city of Troy has by action of its Common Council consented to the abandonment and the substitution of buses. The bus company has agreed to a system of transfers with the United Traction Company lines, to a minimum of 22 buses with a minimum schedule of ten minutes and a five-minute schedule during rush hours; to the payment of a license fee of \$75 per year for each vehicle operated; to the storing of the buses in the Albia carhouse of the United Traction Company, and to the removal under the direction of the city engineer of the poles, wires, tracks, ties and all other paraphernalia now used in the operation of the trolley line.

Financial and Corporate

New Jersey Company to Split Stock

Three for One Division of Common Proposed—Dividends on Preferred to Be Paid Monthly

Directors of the Public Service Corporation of New Jersey, among the subsidiaries of which are the Public Service Railway and the Public Service Transportation Company, announced on Sept. 28 that they would recommend to shareholders that the common stock outstanding be divided in a ratio of three to one and also that eventually the new stock would be put on the equivalent of a \$6 dividend basis as against the present rate of \$5. The directors also will recommend that authorized preferred stock be increased from \$100,000,000 to \$200,000,000 and that the authorized amount of no-par value common shares be increased from 2,000,000 to 10,000,000 shares. The corporation does not intend to offer any additional common stock for subscription by stockholders.

The board will further recommend that dividends on 6 per cent cumulative preferred stock be paid monthly instead of quarterly. Under the recommendation, the authorized 6 per cent cumulative preferred stock would be increased from \$25,000,000 to \$125,000,000. The authorized 8 per cent cumulative preferred would remain at \$25,000,000 and the authorized 7 per cent cumulative preferred at \$50,000,000. On Sept. 25 there were outstanding 1,192,425 shares of no-par common, 215,312 shares of 8 per cent cumulative, 288,570 shares of 7 per cent cumulative and 51,973 shares of 6 per cent cumulative preferred.

In commenting on the proposals Thomas N. McCarter, president, said:

The recommendations are in the interest of more economical financing and a wider distribution of stock holdings among the public. While it is expected that much new capital will be obtained through the sale of our 6 per cent cumulative preferred, at the same time, because of favorable results of operation, common stock of the corporation is coming into favor as an investment and through the lower selling price to result from division will undoubtedly become more attractive to investors of moderate means.

At the proper time I shall recommend to the board that the new stock be placed upon a \$2 a year dividend basis. The proposal to pay monthly instead of quarterly dividends on the 6 per cent cumulative preferred is for the purpose of giving another attractive feature to this security, which is being sold direct to the public by employees of our operating companies.

P. R. T. Stock Increase Approved

The shareholders of the Philadelphia Rapid Transit Company, Philadelphia, Pa., at a special meeting on Sept. 22 approved an increase in the company's preferred stock from \$18,000,000 to \$23,000,000. The new stock, when issued, will bring the total capitalization up to \$53,000,000, it having \$30,000,000 common stock outstanding.

Under the stockholders' approval, the company will issue \$5,000,000 additional preferred stock, the proceeds to go for

capital additions and improvements during next year, including expenditures for track improvements and extensions, retirement of underlying securities, bus equipment and garaging.

According to a statement made to the City Council when that body was considering the question of increased stock under the city-rapid transit agreement, it was stated \$1,550,000 of the new preferred stock would go toward the retirement of underlying securities, including rapid transit bonds and car-trust certificates and similar securities of underlying companies, \$1,700,000 for normal capital expenditures and \$1,750,000 for additional buses. Common stock holders of the company have waived their right to buy the new preferred stock and it will shortly be offered to car riders on a partial payment plan. The par of the new stock will be \$50 and dividends of 7 per cent will be paid.

Toronto Commission Would Abandon Radials

During the negotiations for the transfer of the York Radials to the Toronto Transportation Commission, Toronto, Ont., the latter body submitted to the Board of Control on Sept. 17 a recommendation that the lines, owned by the city, should be abandoned. The commission gave as its reason that deficits would increase further if the radials continued to operate. Although the city under an agreement with the Ontario Hydro-Electric Power Commission, has had to assume the deficits of the last four years of operation of the radials, the board of control at a recent conference with the Toronto Transportation Commission voted unanimously that that body should take care of any future deficits, provided it assumed operation of the radials.

Mayor Foster said that the time had arrived for the city to cease shouldering the burden of about \$25,000 annually. If the only way to effect the saving was to abandon the radials, then he was prepared to go ahead and do so. Ultimately, he believed, it would be a matter for the voters of the city of Toronto to decide.

\$300,000 for Tacony Line

Settlement was made on Sept. 24 by the Philadelphia Rapid Transit Company, Philadelphia, with the Northeastern Philadelphia Transit Company for the acquisition of the old Frankford, Holmesburg & Tacony Railroad. The announcement was made by Albert M. Greenfield, representing the stockholders. A price of \$300,000 was agreed upon last spring and the Public Service Commission has approved. Mr. Greenfield announced that the road would be rebuilt and become a part of the P. R. T. system. It will operate from Blakiston Street to the Frankford "L" terminal at Bridge Street. One fare will be charged and free transfers will be given to and from the line at the "L" terminal.

Rate Settlement in Memphis

New Tentative Base of \$10,674,452
Recalls 1919 Investigation—
Approval Awaited

A compromise on a suit now pending in the Supreme Court of Tennessee involving the rate base of the Memphis Street Railway, Memphis, Tenn., was effected recently. Mayor Paine has approved the terms which settle \$10,674,452 as the rate base. Recommendation for this settlement was made by Ross Harris, valuation expert employed by the city, and E. B. Klewer, city attorney. The settlement will have no immediate bearing on the fare charged by the company. By the terms of the agreement the company will dismiss its appeal to the Supreme Court, thereby making the opinion of the court of civil appeals, which sustained the material contentions of the city, final. Mayor Paine, in approving the terms of the settlement, traced the history of the litigation.

The Railroad and Public Utilities Commission on July 12, 1919, ordered an investigation to ascertain the value of the property as of July 1, 1919, so that it could be determined upon what proper values the company was entitled to earn a fair return.

Valuation reports were made by A. S. Richey, representing the commission; J. H. Perkins, representing the receivers of the company, and Ross Harris, representing the city, and early in 1920 the utilities commission fixed the rate base as of July 1, 1919, at \$11,846,034, in which was included \$787,579, for development costs and \$1,930,544, representing the value of superseded property. To the inclusion of the last two items in the rate base the city objected and filed a certiorari to review the findings of the commission in the Circuit Court of Davidson County, in Nashville. The city lost this case in the Circuit Court and appealed to the Court of Civil Appeals.

REPRODUCTION COST OVERLOOKED

That court decided that while the commission erred in including in the rate base items for superseded property and development costs complained of by the city, the commission should have given, but failed to give, due weight to the reproduction cost of the property of the company—that is, what it would cost to reproduce the physical properties of the company, as of the date fixed, less accrued depreciation—and remanded the case to the utilities commission for a revaluation in accordance with the principles announced by the court. Then the company took the case to the Supreme Court by certiorari.

Since the reproduction cost would equal, if not exceed, the rate base as fixed by the commission, and since the rate of fare would not be affected, and in view of the enormous cost of a revaluation hearing, it was deemed advisable to compromise the law suit, the Memphis Street Railway having agreed to pay all costs. The new rate base, tentatively agreed upon, must be approved by the commission. If adopted, it is substantially the same as the rate base heretofore fixed by the commission, the difference being due to deductions made since 1919, by the sale of certain properties of the company.

CONDENSED BALANCE SHEET OF SEATTLE MUNICIPAL STREET RAILWAY AS OF DEC. 31, 1925

CAPITAL ASSETS	
Total capital assets.....	\$13,578,403
Total interest, redemption and special fund assets.....	355,343
Total current assets.....	1,190,400
Total deferred charges.....	60,852
Deficit—Dec. 31, 1925.....	590,182
	<hr/> \$15,775,182
CAPITAL LIABILITIES	
Bonds outstanding:	
General lien bonds.....	\$775,000
Utility revenue bonds.....	13,524,500
Total capital liabilities.....	<hr/> \$14,299,500
REDEMPTION AND SINKING FUND LIABILITIES	
Unmatured accrued interest on funded debt:	
General lien bonds.....	\$7,812
Utility revenue bonds.....	225,240
	<hr/> \$233,052
Special guaranty deposit (repayable)...	300
Matured unpaid interest on funded debt	3,244
Audited and approved claims and depreciation reserve fund loans payable	28,219
Total interest, redemption and special fund liabilities.....	<hr/> \$264,817
CURRENT LIABILITIES	
Current fund loans payable:	
To general fund.....	\$264,133
To bond funds.....	227,000
To depreciation reserve fund.....	90,000
	<hr/> \$581,133
Amounts reserved on contractor's estimates.....	23,395
Tokens outstanding.....	74,156
Audited and approved claims payable..	250,918
Warrants outstanding.....	243,429
Total current liabilities.....	<hr/> \$1,173,031
	<hr/> \$15,775,182

PAYROLLS AND VACATIONS—1925

Transportation:	Payrolls	Cost of Vacations
Office, inspectors, station masters.....	\$107,541	\$4,306
Trainmen.....	2,100,778	87,696
Shops and carhouses.....	559,047	15,157
Way and structures.....	525,187	20,152
Accounting.....	89,864	3,899
Total.....	<hr/> \$3,382,416	<hr/> \$131,210

SEATTLE MUNICIPAL STREET RAILWAY SEGREGATION OF PASSENGER CAR-HOURS AND CAR-MILES

	Car-Hours	Car-Miles
One-man single truck.....	175,268	1,336,557
One-man double truck.....	715,769	6,878,412
Two-man.....	788,806	7,427,906
Buses.....	57,135	559,236
Total.....	<hr/> 1,736,978	<hr/> 16,202,111

decline of \$169,086 in total operating revenue and an increase of \$224,379 in total operating expenses.

Included in the history are the fluctuations in the fare rate from May 9, 1914, when the cash fare was 5 cents with six tickets for 25 cents, to June 16, 1923, when a cash rate of 10 cents and a token fare of 8½ cents went into effect. Employees numbered 1,869, of whom 1,192 were trainmen receiving from 60 cents to 77 cents an hour. There was a slight decrease in the number of accidents. The total number in 1925 was 6,322, against 6,443 in 1924. Still the amount paid for injuries and damages was higher in 1925, being \$78,567, against \$65,105 in 1924.

Petitions for Valuations Rejected.—The California Railroad Commission has dismissed applications of the city of Oakland and the city of Alameda for a valuation of the property of the San Francisco-Oakland Terminal Railways, Oakland, Cal.

Increase in Net Income on Brooklyn City

For the year ended June 30, 1926, the Brooklyn City Railroad, Brooklyn, N. Y., realized a net income available for dividends of \$1,422,736, compared with \$1,411,576 for a similar period the year previous. Gross revenues from transportation were \$11,399,373, an increase of \$36,092 compared with the previous year. Total operating expenses decreased from \$9,077,698 for the previous year to \$8,963,104. During the year 230,355,382 revenue passengers were carried, compared with 229,613,538 in the preceding year. A higher standard of service was accorded the public, the seat-miles per car-mile increasing from 45.71 to 47.12.

Interest charges showed an increase from \$282,688 to \$500,810 due to the interest on the \$1,627,000 first consolidated mortgage 5 per cent bonds sold on July 1, 1925, and the interest on the equipment trust series "A" 5 per cent certificates issued in January, 1925. The proceeds from the sale of these securities were used to make payments on account of the new cars, to reimburse the company for expenditures on its shops, to purchase materials and supplies and for other corporate purposes. This increase was in part offset by a reduction in the amount paid for rentals of cars and tracks from \$204,832 to \$79,275 due to the use during a portion of the year of the newly purchased cars in lieu of others previously rented.

Pursuant to order of the Transit Commission of the state of New York dated May 24, 1925, the company is proceeding with the inventory and ap-

praisal of its property and it is said that the same will shortly be completed and ready for presentation.

All the 335 new modern type cars contracted for in 1925 were delivered and placed in operation during the summer and fall of 1925. As of Jan. 1, 1926, various agreements having to do with the joint expense of maintenance of track, roadway and cars by the Brooklyn City and the Brooklyn-Manhattan Transit Corporation were terminated by mutual agreement, and the Brooklyn City is now doing all such maintenance work itself. The reduction in the maintenance of equipment compared to previous years is largely due to the newer and more modern type of cars.

The company, jointly with the Brooklyn-Manhattan Transit Corporation, has offered to supply supplemental bus service in Brooklyn on terms which it is believed are more advantageous to the general public than any other suggestion that has been laid before the Board of Estimate and Apportionment of the city of New York. The matter is still under advisement by the Board of Estimate and Apportionment.

Charges for injuries to persons and property were greater than the previous year, largely due to the increase in vehicular traffic. Every effort is being made to decrease the number of accidents, and beginning Aug. 1, 1926, a plan was put in effect under which all employees operating their cars for certain periods without an accident will receive a bonus. It is expected that this plan will prove of advantage to the employees, the public and the company.

Railway Operates Under New Control.—Control of the Valley Railways, Lemoyne, Pa., operating 44 miles of electric railway, particularly in Carlyle and Lemoyne, has passed to the Lehigh Power Securities Corporation. This has brought the Valley Railways into the group of properties under the supervision of the Electric Bond & Share Company, New York, N. Y.

Fate of Line Uncertain.—The possible purchase of the Windsor, Essex & Lake Shore Rapid Railway, Kingston, Ont., by Windsor and adjacent border cities is a question for early consideration. This situation was announced recently by Gordon D. Wickett, president, leaving for England to attend a meeting of the road's bondholders. He forecast a cessation of operations unless the line were taken over by the interested communities of Essex County. Mayor Mitchell of Windsor said he would not countenance purchase of the line until definite information was forthcoming with respect to its financial condition.

Hearing on Abandonment Deferred.—The hearing before the Public Service Commission on the application of the Hudson Valley Railway, Glens Falls, N. Y., for approval of a declaration of abandonment of its Lake George to Warrensburg trolley line and the line from Thomson to Greenwich has been adjourned to Oct. 19 at Albany. The date for a hearing on the matter was first set for Sept. 22 and then adjourned to Oct. 5.

INCOME STATEMENT OF THE BROOKLYN CITY RAILROAD

	Fiscal Year Ended June 30, 1926	Fiscal Year Ended June 30, 1925
Passenger revenue.....	\$11,399,283	\$11,363,196
Other car revenue.....	90	85
Total transportation revenue.....	<hr/> \$11,399,373	<hr/> \$11,363,281
Advertising and other privileges.....	96,666	96,000
Rent of land and buildings.....	126,526	146,292
Rent of tracks and terminals.....	54,527	56,590
Miscellaneous revenue.....	820	1,515
Total operating revenue.....	<hr/> \$11,677,915	<hr/> \$11,663,679
Operating Expenses:		
Maintenance—Way and structures.....	\$1,327,310	\$1,407,398
Equipment.....	1,216,427	1,441,866
Power.....	1,047,848	953,422
Operation of cars.....	4,219,640	4,143,844
Injuries to person and property.....	636,747	583,183
General and miscellaneous expenses.....	515,129	547,982
Total operating expenses.....	<hr/> \$8,963,104	<hr/> \$9,077,698
Net operating revenue..	\$2,714,810	\$2,585,981
Taxes assignable to operation.....	768,207	775,363
Operating income.....	\$1,946,103	\$1,810,617
Non-operating income.....	92,854	101,940
Gross income.....	<hr/> \$2,038,958	<hr/> \$1,912,558
Income Deductions:		
Interest.....	\$500,810	\$282,688
Rent of cars and tracks.....	79,275	204,832
Other deductions from income.....	36,135	13,461
	<hr/> \$616,222	<hr/> \$500,982
Net income.....	<hr/> \$1,422,736	<hr/> \$1,411,576

Legal Notes

FEDERAL CIRCUIT COURT—*Employee Engaged in Interstate Commerce.*

The train of a railway entirely intrastate was carrying both interstate and intrastate shipments when it stopped to allow the electric locomotive to do some switching of empty coal cars. While this was being done, a trainman was injured. He was held to be engaged in interstate commerce. [Youngstown & O. R.R. vs. Halverstadt, 12 Federal (Second) Rep., 995.]

FEDERAL CIRCUIT COURT.—*Cars Used in Interstate Commerce Must Have Safety Coupler.*

A switchman in the yard of an electric interurban railway was injured while endeavoring to couple a car to an electric locomotive. The car was sometimes used in interstate commerce, but was empty at the time and was simply being switched from one to another track. The company was held responsible because the car was not equipped with automatic safety couplers as required by the federal safety appliance act. [Detroit U. R. vs. Craven, 13 Federal (Second) Rep., 352.]

FEDERAL CIRCUIT COURT—*City Ordinance Regulating Motor Vehicles, Passed Under Police Power, Must be Fair and for All Citizens Alike.*

The city of Hammond, Ind., passed an ordinance forbidding motor vehicle common carriers from operating over certain streets, but exempted any motor vehicles with whose owner the city already had a contract. A certain company came under this exemption. The ordinance was said to have been passed "to promote public safety and order and to diminish the congestion of vehicular travel within said city." The suit was brought by a bus company which was excluded under the law but had met all the requirements of the laws of the state of Indiana as to the operation of buses. The Court said there were several reasons why the ordinance should be declared invalid, but the one particularly cited was the exemption mentioned, saying: "Police regulations must be fair and reasonable for all citizens alike, so far as may be." The ordinance "permits some concerns to do the identical things from the doing of which" appellant is excluded. The city had the right to make a contract with one coach company and not with another, but if it had police powers of the extent claimed, it has no right to exercise them against one user of the street and not another. [Schappi Bus Lines, Inc. vs. City of Hammond, 11 Federal (Second) Rep., 940.]

INDIANA.—*Relocation of Tracks Because of Street Improvement.*

A railway company which originally had a 50 year franchise but changed it in 1921 to an indeterminate permit, was required by the State Highway Commission to relocate its tracks and change their grade on a highway which was being improved. The action of

the State Highway Commission was upheld. [Hammond W. & E. C. Railway vs. State Highway Commission, 152 Northeast. Rep., 806.]

KENTUCKY.—*Local License Fee for Interstate Bus Upheld.*

A Kentucky law declares that auto transportation companies which accept licensing and regulation from the state need not take out a local license in those cities through which they operate. A license fee in a small city of from \$25 to \$50 a year per bus, depending on the size of the bus, was upheld as not constituting a burden on interstate commerce, in the case of an interstate bus company that had not taken out a state license. [Northern Kentucky Transportation Co. vs. City of Bellevue, 285 Southwest. Rep. 241.]

MASSACHUSETTS—*Automobile Stopped too Near Track.*

A driver stopped an automobile where it was certain to be hit by a passing electric car if the latter should sway a few inches further than the driver supposed it would. He was held guilty of contributory negligence as a matter of law. [Hurd vs. E. M. S. R. Co., 150 Northeast. Rep., 5.]

MISSOURI.—*High Degree of Care Required to Persons Standing on Step with Door Closed.*

A person tried to board a crowded car at a regular stopping place and stood on the step after the door was closed and the car had started. While in this position, he was hit by the girder of a bridge which the car was crossing. The company, under the humanitarian doctrine, was held responsible, if the conductor knew, or by using the highest degree of care could have known, that an intending passenger was still on the step and might be injured. [Amos vs. Fleming et al., 285 Southwest. Rep., 134.]

NEW HAMPSHIRE—*Interstate Bus Lines Must Not Accept Intrastate Business Unless They Conform to Regulations Laid Down for Motor Bus Common Carriers.*

All recent decisions on the regulation of interstate motor bus carriers by State Public Service Commissions are reviewed, and the terms of the New Hampshire statute on motor bus vehicles was held to apply to all intrastate business done by interstate motor buses. [Haselton vs. Interstate Stage Lines, 133 Atlantic Rep., 451.]

MICHIGAN—*Passenger Signaling Car While Standing Near Track Is Responsible If Injured.*

A person accustomed to travel on a certain interurban line signaled a car to stop at a point where stops are usually made on signal. Expecting the car to stop, the prospective passenger stood very near the track. No stop was made and he was injured. The court held him guilty of contributory negligence. [Devore vs. Rapid Railway, 209 Northwest. Rep., 111.]

NEW YORK—*Not Responsible When Car Hits Child Caught in Rail.*

A child crossing the track between blocks caught his foot in the rail and was struck by a car, whereas, if he had not caught his foot in the rail, probably he would not have been injured. There was no evidence that the rail was defective, and judgment for the plaintiff was reversed and a new trial ordered. [Madden vs. Chalmers, 214 New York Supp., 268.]

OHIO—*Authority to Issue Bus Certificates to Line Operating to State Border.*

A bus company applied for a certificate to operate from a city in Ohio near the state line to the state line between Ohio and Kentucky. The record showed that it had also applied for a route in Kentucky. It was held that the grant of the Ohio franchise was within the power of the municipality and not within the jurisdiction of the Public Utilities Commission. [Canonball Transportation Co. vs. Public Utilities Commission of Ohio., 150 Northeast. Rep., 39.]

OHIO—*Grounds for Revocation of Bus Certificate of Public Convenience and Necessity.*

The Public Utilities Commission revoked a certificate of public convenience and necessity granted to a motor-bus common carrier between Cleveland and Elyria for the following reasons among others: Omission of scheduled trips, operation without certain safety requirements, use of buses over irregular routes for special trips, and use of an outside bus for a schedule trip. The revocation was upheld on all points by the Supreme Court of Ohio, which declared, among other things, that the carrier, having brought itself clearly within the designation of a motor transportation company in order to receive the benefits of the provisions of the motor transportation act, cannot claim exemption therefrom on the theory that as to the so-called special trips, it was a "private contract carrier." [Solt et al. vs. Public Utilities Com. et al., 150 Northeast. Rep., 28.]

VIRGINIA—*Injury to Passenger Alighting from Car Stopped on Wrong Side of Street.*

A city ordinance of Richmond, Va., requires street cars to stop for the receipt and discharge of passengers only on the near side of intersecting streets. The director of public safety made an exception of the corner where the accident occurred, had instructed the company to stop on the far side and had erected a sign to that effect, but the Supreme Court of Appeals of Virginia held that he had exceeded his powers in doing so. The passenger alighting from the front platform of a car stopped at the corner in question was struck by an automobile, whose driver was unaware of the exception and did not expect passengers to be discharged at that point. The court differentiated the case from others where the company was held not liable when alighting passengers were struck by vehicles, because it declared the passenger had been put off at a wrong place. [Virginia Ry. & Power Co. vs. Taylor, 132 Southeast. Rep., 334.]

Personal Items

Charles R. Mahan Comptroller at Highwood

Charles R. Mahan, for the past four years auditor of the Chicago, North Shore & Milwaukee Railroad—the North Shore Line—has been appointed comptroller of this high-speed electrically operated railroad, with offices in Highwood, Ill. Mr. Mahan's appointment to this new office in the North Shore Line official organization comes as a reward for efficient service with transportation companies under the management of Samuel Insull and associates.

It was while employed in the office of the auditor of disbursements of the Chicago, Rock Island & Pacific Railroad



C. R. Mahan

in 1905, where he had charge of the payroll department, that Mr. Mahan became acquainted with T. B. MacRae, now auditor of the Chicago Rapid Transit (elevated) Lines, who also was employed in the same office at that time. Mr. MacRae left this organization to become auditor of the Metropolitan West Side Elevated Railway, Chicago, about the same time that Mr. Mahan became chief clerk to the auditor of the Indiana Harbor Belt Railway, which was then in course of construction. The result of this early acquaintance was that on Sept. 1, 1907, Mr. Mahan was offered and accepted the position of chief clerk to Auditor MacRae on the Chicago elevated line.

In 1911, following consolidation of the elevated lines under the management of Samuel Insull and associates, Mr. Mahan was appointed assistant auditor. He retained this position until May 1, 1916, when he resigned to accept a position as accountant with the Interstate Commerce Commission in Washington, D. C. While engaged in this work he was promoted to accountant in charge of a field party on valuation work.

Returning to Chicago in 1921 to resume his position of assistant auditor

of the Rapid Transit Lines, Mr. Mahan served in this capacity until Feb. 1, 1922, when he was appointed auditor of the North Shore Line. He was holding this position with the North Shore Line at the time of his recent promotion.

Changes in Personnel at Fitchburg

Stockholders of the Fitchburg & Leominster Street Railway, Fitchburg, Mass., met on Sept. 28 and initiated steps to reorganize the company. Wesley W. Sargent, president and general manager, resigned. Other resignations included Herbert I. Wallace as vice-president and William E. Putney as director. The others were also directors. This left three vacancies on the board of directors, places filled by the election of Albert C. Brown, George R. Wallace, Jr., and Robert S. Parks, all of whom are residents of Fitchburg.

Louis E. Cushing, Lowell, Mass., general manager of the Lowell & Fitchburg Street Railway for the last eighteen years, will succeed Wesley W. Sargent as general manager of the Fitchburg & Leominster company. Mr. Cushing enters immediately on his new work.

Other directors of the organization are Harry G. Townsend, Emerson W. Baker, Charles F. Baker and Thomas H. Shea. Charles F. Baker is clerk of the company. A new president and vice-president will be elected.

Major Mathews Resigns

Major Philip Mathews, chief executive officer New York Transit Commission, has resigned, effective Sept. 30, to accept the post of Director of the Governmental Research Bureau at Pittsburgh, Pa. Major Mathews took over the transit assignment on May 15, 1924, when Lincoln C. Andrews resigned to become assistant secretary of the treasury in charge of prohibition enforcement. Mr. Mathews has conducted many public hearings for the commission. In addition to the many transportation problems he helped to solve he has had general charge of all administrative affairs outside the offices of the secretary, legal advisers, and consulting engineer. Major Mathews has held many high army posts.

J. F. Greenawalt, publicity manager of the Mountain States Telephone & Telegraph Company, was recently elected president of the Colorado Public Service Association, Denver, Col. H. S. Robinson was elected first vice-president and V. L. Board second vice-president. O. A. Weller will continue to serve as secretary of both associations.

Frank Kley, for some time assistant superintendent of the Monongahela West Penn Public Service Company in Elkins, W. Va., has been transferred

to Grafton, with a promotion to district superintendent. Mr. Kley has been connected with the electric interests at Elkins for more than nine years, going into the service of what was then the Elkins Power Company in 1917. He has continued his services with the organization since that time. Mr. Kley was graduated from high school in 1917.

L. C. Torrey Appointed Secretary and Treasurer in Chicago

Lincoln C. Torrey, an authority on transportation finances, has been appointed secretary and treasurer of the Chicago, North Shore & Milwaukee Railroad—the North Shore Line—with offices in Chicago, Ill. His promotion to this position of trust at the age of 36 years is an outstanding example of rapid advancement in the public service field. In addition to his duties with the North Shore Line, Mr. Torrey is assistant secretary and assistant treasurer of the Chicago Rapid Transit (elevated) Lines, also under the management of



L. C. Torrey

Samuel Insull and associates, and treasurer of the Niles Center Transit Company. He entered the service of the North Shore Line on Jan. 1, 1921, as engineer auditor and rose rapidly to higher positions of responsibility with this company. He was promoted to valuation engineer in 1922 and became assistant treasurer in 1923. In March, 1925, he was given the double duties of assistant secretary and assistant treasurer, which offices he was holding at the time of his recent promotion.

Mr. Torrey was born at Byfield, Mass., in 1890. He was graduated in 1912 from Harvard, where he specialized in engineering. From 1912 to 1914 he served with the engineer corps of the Pennsylvania Railroad, and during the following two years was pilot engineer on valuation of the same line as ordered by the Interstate Commerce Commission. He was cost engineer with the Goodyear Tire & Rubber Company from 1916 to 1920.

George R. Apfel has been promoted to assistant treasurer and Arthur E. Kullas assistant secretary, succeeding Mr. Torrey in these positions. George G. Green succeeds Mr. Apfel as cashier and Lurton F. Gottlieb has been appointed assistant cashier.

Obituary

A. D. McPherson

A. D. McPherson, auditor of the Pittsburgh Railways, Pittsburgh, Pa., dropped dead on Sept. 24 while crossing Smithfield Street at Fifth Avenue, Pittsburgh. Physicians ascribed his sudden death to heart disease. The late official had been identified with Pittsburgh utilities since 1899, when he entered the employ of the Pittsburgh Traction Company as a clerk. When the Pittsburgh Railways was organized, following the consolidation of the city's traction interests, he was made chief clerk of traffic receipts. In 1924 he assumed the duties of auditor. Besides his railway affiliation he was a member of the Chamber of Commerce.

Mr. McPherson was born in Bellevue. He attended the borough schools and the Allegheny High School.

Alfred Craven

Alfred Craven, well-known engineer, who had a large part in the construction of the subways of New York City, N. Y., died Sept. 30 at Pleasantville, N. Y., where he had been living since his retirement six years ago.

Mr. Craven was chief engineer of the old Rapid Transit Commission, under whose administration the dual subway rapid transit system was planned and built. His achievement in digging the subway system is ranked by engineers with that of the construction of the Panama Canal, and he was often referred to as "the General Goethals of New York City."

He started in the service of the city in 1884, after making a reputation as a civil and mining engineer in California. In 1900, when the first New York subway work was begun, Mr. Craven was appointed division engineer of the Rapid Transit Commission, and was in charge of that part of the construction from Park Avenue and 41st Street to Broadway and 104th Street.

Four years later he was made deputy chief engineer of the Rapid Transit Commission. In 1907 he was appointed deputy engineer of the Subway Commission. He was made acting chief engineer of the same commission in 1910 and a year later chief engineer, in which post he served until 1916, when he became consulting engineer to the Public Service Commission and its successor, the Transit Commission. He retired as consulting engineer in 1920.

Mr. Craven was born in Bound Brook, N. J., Sept. 16, 1846, the son of Rear Admiral T. T. Craven. He was graduated from the Naval Academy in 1867.

Frank Cook, St. Louis district sales manager of the Ohio Brass Company, Mansfield, Ohio, one of the most widely and popularly known salesmen in the electric railway and power fields, died suddenly in Chicago, Sept. 30. Mr. Cook had been ailing for some time, but his condition had not been considered serious. In fact, he had recently seemed much improved. He will be mourned by a host of friends and leaves a place which the Ohio Brass Company feels can never be filled.

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

National Electrical Manufacturers' Association

Gerard Swope Will Head New Organization, Made Up of 270 Leading Companies

Announcement was made recently of the creation of the National Electrical Manufacturers' Association, an organization consisting of 270 leading electrical manufacturers with a gross annual business exceeding \$1,500,000,000. The new organization, with Gerard Swope, president of the General Electric Company, as president, was formed by the merger of the Electric Power Club, the Associated Manufacturers of Electrical Supplies and the Electrical Manufacturers' Council. J. W. Perry, vice-president of the Johns-Manville Company, Inc., was made treasurer.

The general purpose of the new association is to advance the art of manufacturing adequate and reliable electrical equipment and to standardize electrical apparatus, which, it was said, will ultimately mean lower costs and lower selling prices to the public. The association will co-operate with the Department of Commerce in its constructive work, both in standardization and simplification.

Specifically, the objects of the new association, according to its constitution, are to further the interests of the makers of electrical apparatus and supplies in manufacturing, engineering, safety, transportation and other industrial problems; to promote the standardization of electrical apparatus and supplies; to collect and disseminate information of value to its members or to the public; to appear for its members before legislative committees, governmental bureaus and other bodies in regard to matters affecting the industry, and to promote a spirit of co-operation among its members.

Among the charter members were Allis-Chalmers Manufacturing Company, Anaconda Copper Company, Crocker-Wheeler Company, Crouse-Hinds Company, Cutler-Hammer Manufacturing Company, Electric Storage Battery Company, General Electric Company, Landers, Frary & Clark, National Carbon Company, Inc., National Metal Molding Company, Radio Corporation of America, Reliance Electric & Engineering Company, Robbins & Myers Company, Stromberg-Carlson Telephone Company, Western Electric Company and Westinghouse Electric & Manufacturing Company.

New Bus Engines Will Be Exhibited

A six-cylinder, light, high-speed bus engine of new design will be exhibited by the Waukesha Motor Company, Waukesha, Wis., at the American Elec-

tric Railway Association convention in Cleveland. The engine has many features that are of interest, such as the Ricardo head, girder type crankcase, truncated cylinders, and a dynamic thermostat.

All of these features are embodied in Waukesha heavy-duty bus engines such as are being used by the International Harvester, Wilcox, Versare and Fageol companies.

New Italian Electric Locomotives

Ten electric locomotives of a new type have recently been completed by the Breda Company of Milan for use on the Rome-Tivoli-Avezzano Railroad. The engines, which have a wheelbase of 38 ft., are equipped with two motors which drive through gearing a counter-shaft connected to the driving axles by coupling rods. They are designed to be operated by 10,000-volt, three-phase, 45-cycle a.c., which is stepped down to a working tension of 1,600 volts. The motors are so arranged that either eight or twelve poles may be utilized, so that they may either be run in series or parallel.

Authority on Strength of Materials Joins Haskellite Staff

Prof. O. H. Basquin, who for 25 years has been on the staff at Northwestern University, has resigned from the faculty to take charge of the engineering department of the Haskellite Manufacturing Corporation with headquarters in Chicago. He has been acting as consulting engineer for this company since its organization.

Professor Basquin's principal interest in his own graduate work and in his teaching and research work has been in the field of strength of materials. One subject that attracted his attention particularly was the so-called fatigue phenomena of metals. When the National Research Council appointed an advisory committee on this subject toward the close of the war, Professor Basquin was made a member of the committee, the work of which is now drawing to a close.

The experience of Professor Basquin will peculiarly fit him for the problems he faces in connection with the production and application of Haskellite, the structural plywood, and Plymetl, its steel-faced companion. The Haskellite products are used for a wide variety of applications where known physical properties are the first requisites. The process of production in the Haskellite plant must, therefore, be carefully safeguarded to insure absolute uniformity in strength, weight and other properties. The molding of Haskellite and Plymetl for bus and street car roofs and other uses introduces problems in manufacture that require very careful study and frequently the design of spe-

cial equipment. Professor Basquin will devote considerable time and effort to this phase of the company's work.

Important Tests Conducted on Paving Brick

To settle the moot question as to whether brick less than 4 in. in thickness may properly be used in the construction of brick pavements, a comprehensive investigation of the subject has been made on sections of pavement built of brick of different thicknesses and in the form of a circular test track at Arlington, Va. This investigation has been carried on by the Bureau of Public Roads of the United States Department of Agriculture, and the whole subject was covered in a thoroughgoing fashion, not only through service tests on the track itself, under accelerated traffic conditions, but also by means of a series of laboratory tests on the bricks to determine their quality. Several plants manufacturing brick of less than 3-in. thickness have also been visited to determine the attitude of the industry toward the use of a thinner brick and

is a common and serious fault in construction, unnecessarily increasing the cost and resulting in a condition which impairs both the appearance and the serviceability of the pavement; (6) base construction of other than the rigid type may in many cases prove entirely satisfactory; macadam bases and those constructed of certain types of natural earth appear to be suitable when the local conditions are such that these types of construction maintain their stability throughout the year; (7) no difference in the base construction is necessary for the different thicknesses of brick.

On the basis of 1925 shipments of paving brick, the use of the 2½-in. brick would indicate a saving to the country of more than \$1,500,000 annually.

New Yellow Buses for International Railway

Five new gas-electric single-deck buses have been received by the International Railway of Buffalo, N. Y., for use over the new Kenmore-Tonawanda

Seattle Finds Way to Get Its New Cars

Members of the utilities committee of the City Council of Seattle, Wash., now believe that a way is clear to issue \$1,875,000 of bonds for the purchase of eighty new street cars. The proposal to issue the bonds was questioned by Comptroller Harry W. Carroll after the passage of the ordinance. He pointed out that as there has been a decrease in patronage on the street cars there could be no extensions. As a result of views expressed by five Councilmen at the recent committee meeting, it was predicted that a resolution would be introduced in the Council directing Comptroller Carroll to issue the bonds.

T. J. L. Kennedy, Corporation Counsel, holds that if the bonds are issued for extensions to the railway system they would be legal, but if they were for replacements, they would be illegal as the state law provides that replacements of a municipal utility must be met from the revenues. Councilmen pointed out that since Mr. Kennedy had



These Gas-Electric Buses Will Be Used In Interurban Service Out of Buffalo

to ascertain if their manufacture presents any particular difficulties.

A reduction of thickness below the usual 4-in. depth would give a resulting economy in the construction of brick surfaces. Several parts of the investigation have now been completed and an analysis of the data obtained has been published as a series of conclusions in the issue of *Public Roads* for September. The report was made by L. W. Teller, engineer of tests, and J. T. Pauls, associate highway engineer, United States Bureau of Public Roads.

Among the more important conclusions reached by the engineers were the following: (1) Brick 2½ in. thick, of the quality used in the Arlington traffic tests, when properly supported, will prove satisfactory for pavements carrying the heavier types of traffic; (2) brick 2 in. thick, when properly supported and of the quality used in the tests, will be adequate for pavements on streets carrying the lighter types of traffic; (3) a bedding course of plain sand is more effective in reducing breakage of brick than a cement-sand bedding course, the breakage being much less on the former than the latter. The depth of the sand bedding course should not greatly exceed ¾ in. Increasing the depth tends to produce roughness in the pavement; (4) cobbling of the brick is greatly increased as the spacing between bricks is increased; (5) the use of excessive quantities of asphalt filler

route on Military Road. The units were built by the Yellow Truck & Coach Manufacturing Company of Chicago, Ill. They have a seated passenger capacity of 33. They are of the special type which has been developed for Mitten Management for use in Philadelphia.

Pneumatic tires and dual wheels on the rear are provided on these new buses. The body design is of the city service type, to accommodate the maximum number of seated passengers. Half-hour headways will be maintained in both directions over the Military Road, with fifteen-minute service during the morning and evening rush hours.

American Locomotive Will Maintain Dividend Rate

No thought is being entertained by the board of directors of the American Locomotive Company of reducing the dividend rate, according to William H. Woodin, chairman of the board. He states that the \$8 annual dividend virtually is being earned at the present time. He added that the American Car & Foundry Company, of which he is president, is also earning its annual dividend. He believes that the outlook for locomotive and equipment business is somewhat better now because of the heavy traffic which the transportation companies are handling.

left it up to them to decide whether the bonds were for replacements or extensions, there was really no new decision to make, as the ordinance already passed said the bonds were for extensions. Therefore, the way was clear for them to direct Comptroller Carroll to issue the bonds. The contract for the new cars has been let to the St. Louis Car Company.

Duco for Brush Application Now Available

For convenience in finishing sash, interior trim and in other places where spray application does not give maximum efficiency, as well as for all finishing in shops not equipped with pneumatic spray apparatus, Duco finish for application by hand brushing has recently been placed on the market by the chemical products division of E. I. du Pont de Nemours & Company, Parlin, N. J. This new type of Duco can be easily brushed on in the same way as varnish, paint or enamel. It dries dust free in a half hour and the second coat can be applied after three hours. The finish obtained possesses a hard, durable gloss, requiring no polish, although it can be rubbed to a brilliant luster if desired. The manufacturer states that it has been successfully used for refinishing cars already in service, the Duco being applied directly over the old

paint or varnish, either in interior or exterior, and on either wood or metal.

Time saving is an important element in the use of Duco. It is possible to complete the finish of an entire car in one day under rush-job conditions, this representing a real saving in the time that the car is out of service and also in freeing the paint shop for other jobs. It is claimed that the new brush Duco possesses the same durable finish that has characterized Duco heretofore applied by the spraying process.

The finish may be used effectively on street cars as well as buses. The Du Pont Company states that Duco finish has been widely adopted as standard in the automotive industry, including many bus manufacturers, and is being used to an increasing extent on both steam and electric railways.

Mack Sales to Electric Railways

Announcement has been made by the International Motor Company, New York, N. Y., of a number of sales of Mack buses to electric railway companies in recent weeks. Among the orders listed were the following:

Tri-City Railway, Davenport, Iowa, two 25-passenger gas-electric, city type.

Iowa Southern Utilities Company, three 25-passenger city type (for operation by the Ottumwa Street Railway).

Topeka Railways, Topeka, Kan., two 25-passenger city type.

Twin City Motor Bus Company, one 29-passenger city type.

Information for Users of Electric Steel Castings

In the belief that there is a woeful lack of knowledge concerning the manufacturing processes involved in the production of electric furnace steel castings on the part of the users of these castings the Lebanon Steel Foundry, Lebanon, Pa., has published a very interesting set of bulletins on the subject. Twelve of these bulletins have now been issued, and it is planned to carry the series still further in coming months.

Beginning with bulletin No. 1, entitled "The Rise of the Steel Casting Industry," the series treats on such subjects as physical characteristics of electric furnace steel castings, qualities and uses of molding sand, cores, patterns, pattern mounting, various uses of electric steel castings, etc. The material is well illustrated throughout and has been couched in language which

is comprehensible to the man who is only indirectly interested in steel treatment.

The bulletins are intended to be of an educational rather than an advertising nature, and it is along similar lines that the series will be continued in the future. The Lebanon company will be very glad to furnish all of the bulletins to date to any one interested in having them. Bulletins to be issued in the future will also be mailed to those who desire them.

Sash Locks by O. M. Edwards

Sash locks on the 50 street cars being built by the Osgood-Bradley Car Company of Worcester, Mass., for the Pittsburgh Railways are being furnished by the O. M. Edwards Company of Syracuse, N. Y., instead of by the Dayton Manufacturing Company. This item was incorrectly reported in the issue of ELECTRIC RAILWAY JOURNAL for Sept. 4.

Rolling Stock

Chicago, Ill.—Nearly one-third of the 100 new cars ordered last May by the Chicago Surface Lines were delivered on Sept. 15 and have been placed in service. The remainder of the cars, the total cost of which is more than \$1,600,000, are expected to be delivered within the next month. With the additional equipment the company will have 445 new cars, all of which were obtained in a little more than three years. During that time there has been an increase in service of 12,000,000 annual car-miles and an increase in riding of approximately 83,000,000 revenue passengers.

Richmond, Va.—Fifteen new buses were recently ordered by the Virginia Electric & Power Company to augment its bus fleet, which now numbers 64. The new equipment will be used on several extensions and new routes which are being planned by the railway. Thirteen of these buses have been purchased from the White Company of Cleveland, Ohio. Eight of these are model 50-B, seating 29 passengers, and five are of the smaller model 53, seating 21 passengers. The bodies for the smaller type chassis are being built by the Bender Body Company of Cleveland, Ohio. The two buses not being furnished by the White Company were ordered from the Yellow Truck & Coach Manufacturing Company, Chicago, Ill.

Community Traction Company, Toledo, Ohio, purchased twelve 29-passenger city type buses from the International Motor Company. The Mack buses will be operated on Front Street, at a four-minute headway. Smaller buses are being used for feeder service to the main bus lines operated by the company. It is possible that additional routes will be started in the near future.

Track and Line

Virginia Electric & Power Company, Richmond, Va., intends to lay out about 10 miles of new trackage for the electric car service. On the Belmont line a double track will be placed from Belmont and Cary Streets to Granite Street, adjacent to William Byrd Park.

An extension will be laid on Broad Street from Sheppard Street to the city limits. In the Grove Avenue "Crest" section a line will be run on Lafayette Street from Broad to Grove Avenues, connecting with the existing Westhampton line. The Highland Park line will be extended along First Avenue to Highland Street, then to Patrick and to Meadowbridge Road. The Hull Street line, in South Richmond, will be run from the Broad Rock Road to 43d Street.

Worcester Consolidated Street Railway, Worcester, Mass., is relocating and changing the grade of 3,700 ft. of track in the town of Boylston at an estimated cost of \$13,500. Also the grade of track is being changed on 2,900 ft. of track on Merriam Avenue, Leominster, at an estimated cost of \$5,000. The cost of relocating and reconstruction of 475 ft. of track on Canal Street, Millbury, is estimated at \$3,600. This will involve the use of 10 tons of 7-in. girder rail and a new special curve. Six new crossing frogs have been installed at Barbers Crossing at an estimated cost of \$8,000.

Trade Notes

Ohio Brass Company, Mansfield, Ohio, will pay an extra dividend of \$1 a share on the common, in addition to the regular quarterly payment of \$1 a share, according to a recent decision of the board of directors, it was reported.

Central Alloy Steel Corporation is the new name under which the Central Steel Company of Massillon, Ohio, and the United Alloy Steel Corporation of Canton, Ohio, have been consolidated. The two plants in Massillon and Canton will continue to be operated as divisions of the central organization.

New Advertising Literature

Ingersoll-Rand Company, New York, N. Y., has published an interesting little booklet entitled "Clearing the Way for the Comforts of Life." It embraces a brief narrative of the development of American railway motive power from its earliest stage and leading up to the recent advent of the oil-electric locomotive. A glimpse is given of the economies already effected by this new type of locomotive and of its potential effect upon the future of railroading in America.

Reo Motor Car Company, Lansing, Mich., has issued a booklet describing its several types of buses. Illustrations and data on the chair coach for intercity and interurban service, the payer bus for city service and the payer Grand for combination city and suburban service appear in the booklet, as well as a discussion of the relative advantages of large and small capacity buses.

General Electric Company, Schenectady, N. Y., has issued bulletin GEA-504, entitled "Electrification of the Detroit Tunnel Lines of the Michigan Central R.R." Pictures and descriptions of the operation of the electrified division and of the electrical equipment are included.

Metal, Coal and Material Prices

Metals—New York		Sept. 28, 1926
Copper, electrolytic, cents pr lb.	.....	14.275
Copper wire, cents per lb.	.....	16.25
Lead, cents per lb.	.....	8.725
Zinc, cents per lb.	.....	7.72
Tin, Straits, cents per lb.	.....	71.00
Bituminous coal, f.o.b. Mines		
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons.	.....	\$5.875
Somerset mine run, Boston, net tons.	.....	2.075
Pittsburgh mine run, Pittsburgh, net tons.	.....	2.00
Franklin, Ill., screenings, Chicago, net tons	.....	1.525
Central, Ill., screenings, Chicago, net tons.	.....	1.40
Kansas screenings, Kansas City, net tons.	.....	2.35
Materials		
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	.....	\$5.75
Weatherproof wire base, N. Y., cents per lb	.....	17.75
Cement, Chicago net prices, without bags.	.....	2.10
Linseed oil (5-bbl. lots), N. Y., cents per lb.	.....	11.4
White lead in oil (100-lb. keg), N. Y., cents per lb.	15.25
Turpentine (bbl. lots), N. Y., per gal.	\$0.945

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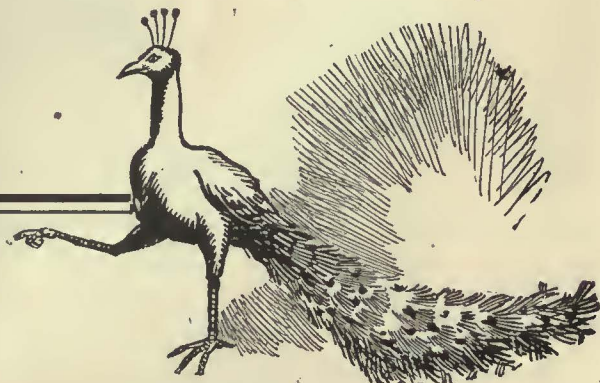
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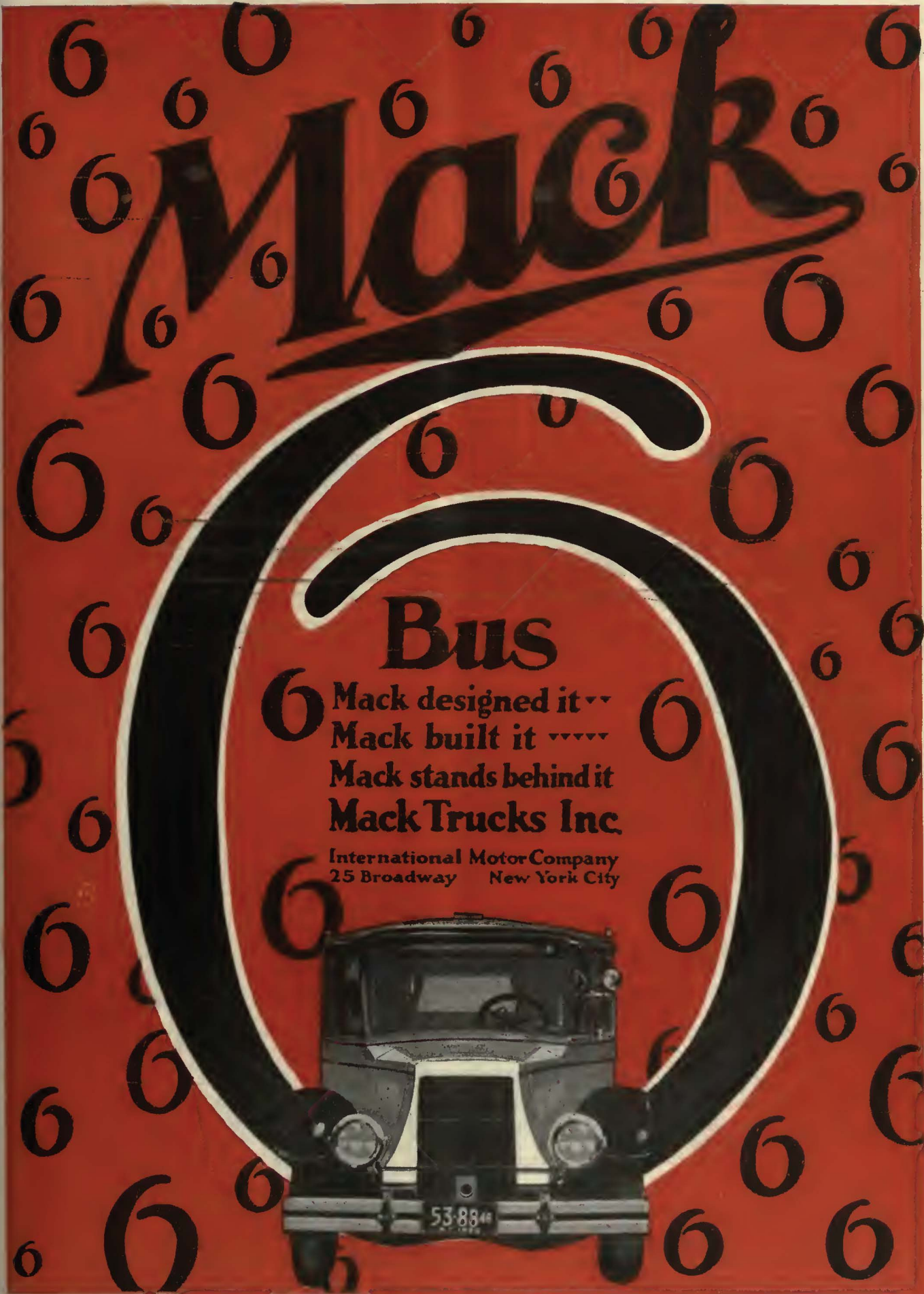
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- Cincinnati, Electrical Engineering & Mfg. Co., 607 Mercantile Library Building.
- Cleveland, Electrical Engineering & Mfg. Co., 422 Union Building.
- Baltimore, O. T. Hall, Sales Engineer, 437-A Equitable Building.
- Revere, Mass., J. F. Drummey, 75 Pleasant Street.
- Los Angeles, Special Service Sales Co., 502 Delta Building.
- San Francisco, Special Service Sales Co., 222 Underwood Bldg., 545 Market Street.
- Toronto, Can., Railway & Power Engineering Corp., Ltd., 101 Eastern Ave.
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 68 Church St. 542 So. Dearborn St.
Works; Schenectady, N. Y.

*There is a
Peerce Specialty for
every Distribution
requirement*



Hubbard and COMPANY
PITTSBURGH • OAKLAND, CAL. • CHICAGO



Electric Railway
AIMCO
Automatic
Signals

for Accessibility
and Reliability

EST. 1885 AIMCO - NC. 1918

**"American"
INSULATING
MACHINERY
COMPANY**

PHILADELPHIA, NEW YORK, PARIS, ENGLAND

Sales Agents:
Electric Service Supplies Co.
Philadelphia New York Chicago

Railway Equipment

- | | |
|--------------------|-------------------------|
| Car Ventilators | Universal Lanterns |
| Bus Ventilators | Classification Lanterns |
| Air Sanders | Selector Switches |
| Mechanical Sanders | Fare Box Lights |
| Indicating Signals | Water Tanks |

THE NICHOLS-LINTERN CO.
7960 LORAIN AVENUE CLEVELAND, OHIO

Kalamazoo Trolley Wheels

The value of Kalamazoo Trolley Wheels and Harps has been demonstrated by large and small electric railway systems for a period of thirty years. Being exclusive manufacturers, with no other lines to maintain, it is through the high quality of our product that we merit the large patronage we now enjoy. With the assurance that you pay no premium for quality we will appreciate your inquiries.



THE STAR BRASS WORKS
KALAMAZOO, MICH., U. S. A.



We make a specialty of
**ELECTRIC RAILWAY
LUBRICATION**

We solicit a test of TULC
on your equipment

The Universal Lubricating Co.
Cleveland, Ohio
Chicago Representatives: Jameson-Boss Company,
Straus Bldg.



Use only Awebco Tape on your Armatures
Field Coils have better protection when wound with
"AWEBCO Tape." Send for samples.

ANCHOR WEBBING COMPANY
300 Brook Street, Pawtucket, Rhode Island

WHEEL TRUING BRAKE SHOE



**DON'T
REMOVE
WORN
WHEELS**

This shoe does the work while your
car is in service.

**SAVES TIME—SAVES LABOR—
SAVES MONEY**

WHEEL TRUING BRAKE SHOE CO.
Detroit, Mich.



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 BABCOCK & WILCOX COMPANY

85 LIBERTY STREET, NEW YORK

Builders since 1868 of
Water Tube Boilers
of continuing reliability

Makers of Steam Superheaters
since 1898 and of Chain Grate
Stokers since 1893



WORKS
Bayonne, N. J.
Barberton, Ohio

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

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 Agular 104
SAN JUAN, Porto Rico, Royal Bank Building

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



CARNEGIE STEEL COMPANY
PITTSBURGH - PENNA.

WM. **WHARTON** JR. & INC. CO.
TISCO MANGANESE STEEL TRACKWORK.

Wharton trackwork, in which the famous Tisco Manganese Steel has been used, will be found on the leading railways of the country.

Plant: Easton, Pa.



AN IRON THAT RESISTS RUST-ACID-CORROSION

So much so, in fact, that it is used for citric acid containers, turbine buckets, blades, coal mine equipment, marine hardware, and sporting goods.

DELHI TOUGH IRON

is worthy of your investigation.
May we send you the facts?



Special Track Work of every
description

THE BUDA COMPANY

Harvey (Suburb Chicago) Illinois

Lorain Special Trackwork Girder Rails

Electrically Welded Joints

THE LORAIN STEEL COMPANY

Johnstown, Pa.

Sales Offices:
Atlanta Philadelphia Chicago Cleveland Pittsburgh Dallas New York
Pacific Coast Representatives:
United States Steel Products Company
Los Angeles Portland San Francisco Seattle
Export Representatives:
United States Steel Products Company, New York, N. Y.

Bankers and Engineers

Ford, Bacon & Davis
 Incorporated
Engineers
 115 Broadway, New York
 PHILADELPHIA CHICAGO SAN FRANCISCO

The J. G. White
Engineering Corporation
 Engineers—Constructors
 Oil Refineries and Pipe Lines, Steam and Water Power Plants, Transmission
 Systems, Hotels, Apartments, Office and Industrial Buildings, Railroads.
 43 Exchange Place New York

STONE & WEBSTER
 Incorporated
 EXAMINATIONS REPORTS APPRAISALS
 ON
 INDUSTRIAL AND PUBLIC SERVICE PROPERTIES
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 ENGINEERS AND CONSULTANTS
Traction-Traffic-Equipment-Power Investigations
 TRANSPORTATION, TRAFFIC, AND OPERATING SURVEYS
 COORDINATING SERVICE—FINANCIAL REPORTS
 APPRAISALS—MANAGEMENT
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 ENGINEERS
 PUBLIC UTILITIES & INDUSTRIALS
 Design Examinations Construction Reports Valuations Management
 CHICAGO NEW YORK SAN FRANCISCO

Byllesby
Engineering & Management
 Corporation
 231 S. La Salle Street, Chicago
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ALBERT S. RICHEY
 ELECTRIC RAILWAY ENGINEER
 WORCESTER, MASSACHUSETTS
 REPORTS-APPRAISALS-RATES-OPERATION-SERVICE

ENGELHARDT W. HOLST
 Consulting Engineer
 Appraisals Reports Rates Service Investigation
 Studies on Financial and Physical Rehabilitation
 Reorganization Operation Management
 683 Atlantic Ave., BOSTON, MASS.

Transmission Line and Special Crossing
Structures, Catenary Bridges
 WRITE FOR OUR NEW DESCRIPTIVE CATALOG
ARCHBOLD-BRADY CO.
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DAY & ZIMMERMANN, INC.
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 VALUATIONS - MANAGEMENT
 NEW YORK PHILADELPHIA CHICAGO

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ENGINEERS AND CONSTRUCTORS
 120 BROADWAY, NEW YORK
 ENGINEERING FINANCING
 CONSTRUCTION YOUNGSTOWN, O. MANAGEMENT

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 Consultant on Fares and Motor Buses
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 143 Crary Ave., Mt. Vernon, N. Y.

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 CONSULTING ENGINEERS
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 INVESTIGATIONS COVERING
 Reorganization Management Operation Construction
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 Operating Problems Rates Traffic Surveys
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 Engineering and Management, Construction,
 Financial Reports, Traffic Surveys
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 Incorporated
ENGINEERING AND CONSTRUCTION
 Examinations—Reports—Valuations
 Transportation Problems—Power Developments
 68 Trinity Place, New York
 CHICAGO ST. LOUIS

THE P. EDWARD WISH SERVICE
 50 Church St. Street Railway Inspection 131 State St.
 NEW YORK DETECTIVES BOSTON


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

Our advertisement in the issue of September 18 showed how
HASKELITE and PLYMETL
 have proved their claims to superiority.
Another ad will appear next week.
HASKELITE MANUFACTURING CORPORATION
 133 W. Washington St., Chicago, Ill.

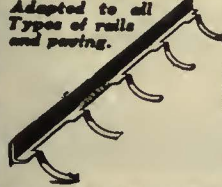
Hale and Kilburn SEATS
 Better Quality Seats For Cars and Buses
 Hale-Kilburn Co.
 1800 Lehigh Ave., Philadelphia, Pa.

Coin Counting and Sorting Machines
FARE BOXES
 Lever-Operated and Slip Change Carriers
The Cleveland Fare Box Co.
 Cleveland, Ohio
 Canadian Cleveland Fare Box Co., Ltd., Preston, Ont.

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.
 Cameron Electrical Mfg. Co., Ansonia, Connecticut


Gets Every Fare
PEREY TURNSTILES or PASSIMETERS
 Use them in your Prepayment Areas and Street Cars
Perey Manufacturing Co., Inc.
 101 Park Avenue, New York City

BRAZED Rail Bonds **ARC WELD**
ERICO
 Portable Arc Welding Outfits
The Electric Railway Improvement Co.
 Cleveland, Ohio


 Adapted to all Types of rails and paving.
GODWIN Steel Paving Guards
 Proven by service to economically prevent soepage and disintegration of street railway paving.
 Write for Illustrated Catalog No. 30
W. S. GODWIN CO., Inc.
 Race and McComas St., Baltimore, Md.



The Wrong Product to Buy by "Eye"!

Varnished insulations have a way of looking much alike. Their differences don't show up sometimes for a long time . . . but they *do* show up, and often in a way that is no compliment to the people behind the job.

When tempted to consider Acme Varnished Insulations solely on price, remember this:

Pure vegetable oil varnish is used. It is made in our own factory, under scientific control and applied in specially designed towers, under *accurately regulated heat*. The result is a smooth, tough, flexible film.

The Cambrics are made from selected cotton cloth, woven from long-staple yarn. They are then given a special finish which insures remarkable tensile and tearing strengths and uniform thickness.

The Silks are the finest Japanese grades obtainable—of great smoothness and tensile strength.

For the Papers, raw stock is chosen especially for its fitness for varnished insulations. It is **UNIFORMLY** everything that it should be.

Acme Varnished Insulations pass all standard tests . . . with plenty of margin.

Think twice when considering Acme—the first time about the **QUALITY**.

May we send you Catalog 3J telling about Acme Wire Products?

ACME WIRE PRODUCTS

THE ACME WIRE CO.

Main Office and Plant, NEW HAVEN, CONN.

New York, 52 Vanderbilt Ave.
 Boston, 80 Federal St.

Chicago, 427 West Erie St.
 Cleveland, Guardian Bldg.

Loan Value and Space Buying

BUSINESS concerns seeking credit at regular intervals submit detailed audits by disinterested public accountants. The banker making the loan demands it.

These audits instantly disclose the exact financial condition of the business. They show the true value of inventories and assets; costs of operation; profits and loss. Such an audit creates confidence and is considered a necessity in banking operations.

The A. B. C. audit serves a similar purpose in advertising. A publisher or his representative in selling space presents his latest A. B. C. report. This shows quantity, territory of distribution, methods by which circulation was secured, and many other details necessary for the intelligent purchase of advertising space.

A study of the A. B. C. audit brings out every detail of circulation data, and immediately establishes confidence between the Buyer and Seller of Space.

For publishers to sell and advertisers to buy on the basis of A. B. C. reports is nothing more than putting efficient Business Methods into Advertising.

Let the Electric Railway Journal submit their latest A. B. C. report before you make your next advertising contract.

SEARCHLIGHT SECTION

USED EQUIPMENT & NEW—BUSINESS OPPORTUNITIES

UNDISPLAYED—RATE PER WORD:

Positions Wanted, 4 cents a word, minimum 75 cents an insertion, payable in advance.
Positions Vacant and all other classifications, 8 cents a word, minimum charge \$2.00.
Proposals, 40 cents a line an insertion.

INFORMATION:

Box Numbers in care of any of our offices count 10 words additional in undisplayed ads.
Discount of 10% if one payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED—RATE PER INCH:

1 to 3 inches.....\$3.50 an inch
4 to 7 inches..... 4.30 an inch
8 to 14 inches..... 4.10 an inch
Rates for larger spaces, or yearly rates, on request.
An advertising inch is measured vertically on one column, 3 columns—30 inches—40 a page.

ERJ

POSITIONS VACANT

AN exceptional opportunity is offered to an exceptional, rapid thinking, full of life, experienced railway superintendent, who knows the business in all its branches. Must be fully capable of directing any part of the business. Give full information as to experience, former employer and salary received. Evanston Railway Co., Evanston, Ill.

POSITIONS WANTED

OPERATING executive, now employed desires change, twenty-five years' practical electric railway transportation experience, familiar with making schedules, public relations, labor and traffic problems, and requirements for successful and efficient operation. PW-935, Electric Railway Journal, 7 So. Dearborn Street, Chicago, Ill.

Why Save It?

Equipment you have replaced, or for which you have no further use can probably be sold at a good price now. Later it may not be worth as much.

Weed out equipment and let a

"Searchlight" Ad

help you sell it promptly

G-9

ELECTRIC SHOVEL

1 1/2-yd. Vulcan, standard gage, 800 v., d.c. shovel. In first class condition. Must be moved at once so only \$1,700.00 will buy it.

ZELNICKER IN ST. LOUIS

Balls Equipment Steel Piling, etc.

FOR SALE

14 BIRNEY SAFETY CARS

Brill Bullt

West. 508 or G.E. 264 Motors
Cars Complete—Low Price—Fine Condition
ELECTRIC EQUIPMENT CO.
Commonwealth Bldg., Philadelphia, Pa.

FOR SALE

Standard Birney Safety Cars

2—Double end, 34 capacity, G. E. motors and lightning arresters, West. air brakes, Safety car devices, Economy meters, International registers, 42-in. gage.

The Denver & So. Platte Ry. Co.
210 Tramway Bldg., Denver, Colo.

FOR SALE

10 Practically new specially constructed

BIRNEY CARS

Wgt. 10-ton, type of motor 2 GE 247-A, double doors, equipped for double end operation and all safety devices.

IRVING S. VAN LOAN CORPORATION

1750 Broadway, New York City
Specialists in street cars or any part of a street car.
Illustrated bulletin supplied on request.

SAVE 30% TO 50% ON
RAILS-LOCOMOTIVES-CARS
Economy—Service
Quality—Reliability
HYMAN-MICHAELS COMPANY
Peoples Gas Bldg., Chicago
ST. LOUIS — DALLAS — LOS ANGELES
SAN FRANCISCO — PORTLAND — SEATTLE

Today's Prices Are Highest

The quicker idle equipment is sold, the higher the selling price it can demand—today's prices are always highest because—

Equipment permitted to remain unused depreciates rapidly and occupies valuable space. Every day of idleness brings down the possible selling price.

Let
"Searchlight"
Help
You

"Searchlight" Locates Quick Buyers

The wise owner of idle equipment promptly informs the field of his desire to sell through an advertisement in the Searchlight Section, where he knows that those who might need what he has will be most likely to look first.

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
Bethlehem Steel Co.
Brill Co., The J. G.
Cincinnati Car Co.
Johnson & Co., J. R.
National Ry. Appliance Co.
Westinghouse E. & M. Co.

Axles, Carbon Vanadium
Johnson & Co., J. R.

Axles, Rear
Clark Equipment Co.

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

Babbitt Metal
Johnson & Co., J. R.

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

Barges, Steel
American Bridge Co.

Batteries, Dry
Nichols-Lintern Co.

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

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

Bells and Buzzers
Consolidated Car Heating Co.

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

Benders, Rail
Railway Track-work Co.

Body Material, Haskelite and Plymetl
Haskelite Mfg. Corp.

Boilers
Babcock & Wilcox Co.

Boiler Tubes
National Tube Co.

Bond Testers
American Steel & Wire Co.
Electric Service Supplies Co.

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

Bonds, Rail
Amer. Steel & Wire Co.
Electric Railway Improvement Co.
Elec. Service Supplies Co.
Ohio Brass Co.
Railway Track-work Co.
Una Welding & Bonding Co.

Brackets and Cross Arms (See also Poles, Ties, Posts, Etc.)
American Bridge Co.
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.
Brill Co., The J. G.
Wheel Truing Brake Shoe Co.

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

Bridges, Steel
American Bridge Co.

Brushes, Carbon
General Electric Co.
Jeandron, W. J.
Le Carbone Co.
Morganite Brush Co., Inc.
Westinghouse E. & M. Co.

Brushes, Graphite
Morganite Brush Co., Inc.

Buildings, Steel
American Bridge Co.

Bulkheads
Haskelite Mfg. Corp.

Bunkers, Coal
American Bridge Co.

Bus Seats
Hale-Kilburn Co.

Buses, Motor
Brill Co., The J. G.

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

Cables. (See Wires and Cables)

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

Cambric Yellow and Black Varnish
Mica Insulator 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.

Car Wheels, Rolled Steel
Bethlehem Steel Co.

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

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

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

Cars, Second Hand
Electric Equipment Co.

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

Castings, Gray Iron and Steel
American Bridge Co.

Catchers and Retrievers, Trolley
Earl, C. I.
Elec. Service Supplies Co.
Ohio Brass Co.
Wood Co., Chas. N.

Catenary Construction
Archbold-Brady Co.

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

Ceilings, Plywood, Panels
Haskelite Mfg. Corp.

Cement
N. Amer. Cement Corp.
Cement Accelerator
N. Amer. Cement 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.
Westinghouse E. & M. Co.

Cleaners and Scrapers, Track (See also Snow-Flows, Sweepers and Brooms)
Brill Co., The J. G.
Cincinnati Car Co.
Ohio Brass Co.

Clusters and Sockets
General Electric Co.

Coal and Ash Handling (See Conveying and Hoisting Machinery)

Coil Banding and Winding Machines
Elec. Service Supplies Co.
Westinghouse Elec. & M. Co.

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

Coils, Choke and Kieking
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.

Commutator Slotters
Elec. Service Supplies Co.
General Electric Co.
Westinghouse E. & M. Co.
Wood Co., Chas. N.

Commutator Truing Devices
General Electric Co.

Commutators or Parts
Cameron Electrical Mfg. Co.
General Electric Co.
Westinghouse E. & M. Co.

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

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

Condenser Papers
Irvington Varnish & Ins. Co.

Connectors, Solderless
Westinghouse E. & M. Co.

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

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

Controller Regulators
Elec. Service Supplies Co.

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

Converters, Rotary
General Electric Co.
Westinghouse E. & M. Co.

Conveying and Hoisting Machinery
American Bridge Co.

Copper Wire
American Brass Co.
American Steel & Wire Co.
Anaconda Copper Mining Co.

Copper Wire Instruments, Measuring, Testing and Recording
American Brass Co., The
American Steel & Wire Co.
Anaconda Copper Mining Co.

Cord, Bell, Trolley, Register, etc.
American Steel & Wire Co.
Brill Co., The J. G.
Elec. Service Supplies Co.
International Register Co.
Roebbling's Sons Co., John A.
Samson Cordage Works

Cord Connectors and Couplers
Elec. Service Supplies Co.
Samson Cordage Works
Wood Co., Chas. N.

Conplers, Car
Brill Co., The J. G.
Cincinnati Car Co.
Ohio Brass Co.
Westinghouse Tr. Br. Co.

Cranes, Hoists & Lifts
Buda Co., The
Electric Service Supplies Co.

Cross Arms (See Brackets)

Crossings
Ramapo Ajax Corp.
Wm. Wharton, Jr. & Co.

Crossing Foundations
International Steel Tie Co.

Crossings, Frog and Switch
Ramapo Ajax Corp.
Wm. Wharton, Jr. & Co.

Crossings, Manganese
Bethlehem Steel Co.
Ramapo Ajax Corp.
Wm. Wharton, Jr. & Co.

Crossing Signals. (See Signal Systems, Highway Crossing)

Crossings, Track (See Track, Special Work)

Crossings, Trolley
Ohio Brass Co.
Westinghouse E. & M. Co.

Curtains & Curtain Fixtures
Brill Co., The J. G.
Pantasote Co., Inc.

Dealer's Machinery & Second Hand Equipment
Denver & So. Platte Ry. Co.
Elec. Equipment Co.
Hyman-Michaels Co.
Van Loan Corp., Irving S.
Zelnicker in St. Louis

Derailing Switches
Ramapo Ajax Corp.

Destination Signs
Elec. Service Supplies Co.

Detective Service
Wish Service, Edward P.

Door Operating Devices
Brill Co., The J. G.
Consolidated Car Heat. Co.
National Pneumatic Co.

Doors & Door Fixtures
Brill Co., The J. G.
General Electric Co.
Hale-Kilburn Co.

Doors, Folding Vestibule
National Pneumatic Co.

Drills, Track
Amer. Steel & Wire Co.
Elec. Service Supplies Co.
Ohio Brass Co.

Dryers, Sand
Elec. Service Supplies Co.
Ohio Brass Co.
Westinghouse Elec. & Mfg. Co.

Ears
Elec. Service Supplies Co.
Ohio Brass Co.
Westinghouse E. & M. Co.

Electric Grinders
Railway Track-work Co.

Electric Transmission Towers
American Bridge Co.

Electrical Wires and Cables
Amer. Electrical Works
Amer. Steel & Wire Co.
John A. Roebbling's Sons Co.

Electrodes, Carbon
Railway Track-work Co.
Una Welding & Bonding Co.

Electrodes, Steel
Railway Track-work Co.
Una Welding & Bonding Co.

Engineers, Consulting, Contracting and Operating
Archbold-Brady Co.
Beeler, John A.
Buchanan & Layng Corp.
Byllesby Co., H. M.
Day & Zimmermann, Inc.
Ford, Bacon & Davis
Hemphill & Wells
Holat, Engelhardt W.
Jackson, Walter
Kelker & DeLewy
McClellan & Junkersfeld
Richey, Albert S.
Sanderason & Porter
Stevens & Wood
Stone & Webster
White Eng. Corp., The J. G.

Engines, Gas, Oil and Steam
Westinghouse E. & M. Co.

Engines, Gasoline
Continental Motors Co.

Exterior Side Panels
Haskelite Mfg. Corp.

Fare Boxes
Cleveland Fare Box Co.
Nat'l Ry. Appliance Co.
Perey Mfg. Co.

Fare Registers
Elec. Service Supplies Co.

Fences, Woven Wire and Fence Posts
Acme Wire Co., The
Amer. Steel & Wire Co.

Fenders and Wheel Guards
Brill Co., The J. G.
Cincinnati Car Co.
Consolidated Car Fender Co.
Star Brass Works
Wood Co., Chas. N.

Fibre and Fibre Tubing
Westinghouse E. & M. Co.

Field Coils (See Coils)

Flange-way Guards, Steel
W. S. Godwin Co., Inc.

Flaxinum Insulators
National Railway Appliance Co.

Floodlights
Elec. Service Supplies Co.

Floor, Sub
Haskelite Mfg. Corp.

Floors
Haskelite Mfg. Corp.

Forgings
Brill Co., The J. G.

Frogs & Crossings, Tee Rail
Bethlehem Steel Co.
Ramapo Ajax Corp.
Wm. Wharton, Jr. & Co.

Frogs, Track (See Track Work)

Frogs, Trolley
Elec. Service Supplies Co.
Ohio Brass Co.
Westinghouse E. & M. Co.

Furnaces, Electric
American Bridge Co.

Fuses and Fuse Boxes
Consolidated Car Heat. Co.
General Electric Co.
Westinghouse E. & M. Co.

Fuses, Refillable
General Electric Co.

Gaskets
Westinghouse Tr. Br. Co.

Gas-Electric Cars
General Electric Co.
Westinghouse E. & M. Co.

Gas Producers
Westinghouse E. & M. Co.

Gates, Car
Brill Co., The J. G.
Cincinnati Car Co.

Gauges, Oil and Water
Ohio Brass Co.

Gear Blanks
Brill Co., The J. G.

Gear Cases
Chillingworth Mfg. Co.
Elec. Service Supplies Co.
Westinghouse E. & M. Co.

Gears and Pinions
Elec. Service Supplies Co.
General Electric Co.
Nat'l Ry. Appliance Co.
Nuttall Co., R. D.

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General Electric Co.

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

Gilder Rails
Bethlehem Steel Co.
Lorain Steel Co.

Gongs (See Bells and Gongs)

Greases (See Lubricants)

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Metal & Thermit Corp.
Railway Track-work Co.

Grinders, Portable
Railway Track-work Co.

Grinders, Portable Electric
Railway Track-work Co.

Grinding Bricks and Wheels
Railway Track-work Co.

Guard Rail Clamps
Ramapo Ajax Corp.

Guard Rails, Tee Rail & Manganese
Ramapo Ajax Corp.
Wm. Wharton, Jr. & Co.

Guns, Trolley
Elec. Service Supplies Co.
Ohio Brass Co.

Harps, Trolley
Elec. Service Supplies Co.

Nuttall Co., R. D.
Star Brass Works

Headlights
Elec. Service Supplies Co.
General Electric Co.
Ohio Brass Co.

Headlining
Haskelite Mfg. Corp.
Pantasote Co., Inc.

Heaters, Car (Electric)
Consolidated Car Heat. Co.
Gold Car Heat. & Ltg. Co.
Nat'l Ry. Appliance Co.
Smith Heater Co., Peter

(Continued on page 32)

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Mica Insulator Co.
Okonite Co.
Okonite-Callender Cable Co. Inc.
U. S. Rubber Co.
Westinghouse E. & M. Co.
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Amer. Ins. Machinery Co.
- Insulating Silk**
Irvington Varnish & Ins. Co.
- Insulating Varnishes**
Irvington Varnish and Insulating Co.
- Insulation (See also Paints)**
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Elec. Service Supplies Co.
General Electric Co.
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Mica Insulator Co.
Okonite Co.
Okonite-Callender Cable Co. Inc.
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Westinghouse E. & M. Co.
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- Insulator Pins**
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Hubbard & Co.
- Insulators (See also Line Materials)**
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Elec. Service Supplies Co.
General Electric Co.
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Ohio Brass Co.
Westinghouse E. & M. Co.
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Haskelite Mfg. Corp.
- Interurban Cars**
(See Cars, Passenger, Freight, Express, etc.)
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Elec. Service Supplies Co.
National Ry. Appliance Co.
- Journal Boxes**
Brill Co., The J. G.
- Lamps, Guards and Fixtures**
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General Electric Co.
Westinghouse E. & M. Co.
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Westinghouse E. & M. Co.
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Nichols-Lintern Co.
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Westinghouse E. & M. Co.
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Electric Ry. Equipment Co.
Elec. Service Supplies Co.
General Electric Co.
Hubbard & Co.
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Texas Company
Universal Lubricating Co.
- Lubricants, Oil and Grease**
Texas Company
Universal Lubricating Co.
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Ramapo Ajax Corp.
Wm. Wharton, Jr. & Co.
- Manganese Steel, Special Track Work**
Bethlehem Steel Co.
Wm. Wharton, Jr. & Co.
- Manganese Steel Switches, Frogs & Crossings**
Bethlehem Steel Co.
Ramapo Ajax Corp.
Wm. Wharton, Jr. & Co.
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Mica Insulator Co.
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- Motor Buses (See Buses, Motor)**
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Wood Co., Chas. N.
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Ohio Brass Co.
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Naugle Pole & Tie Co.
- Poles, Trolley**
Bell Lumber Co.
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National Tube Co.
Nuttall Co., R. D.
- Poles, Tubular Steel**
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Elec. Service Supplies Co.
National Tube Co.
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Westinghouse Tr. Brake Co.
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- Railway Welding (See Welding Processes)**
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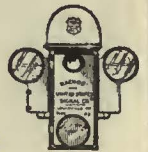
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ALPHABETICAL INDEX TO ADVERTISEMENTS

Table with columns for letter (A-Z), Page, and company name. Includes entries like Acme Wire Co., American Bridge Co., Babcock & Wilcox Co., etc.

WHAT AND WHERE TO BUY

(Continued from page 32)

Table listing various products and their suppliers. Columns include product names (e.g., Turbines, Steam; Welding Processes and Apparatus) and supplier names (e.g., General Electric Co., Westinghouse E. & M. Co.).

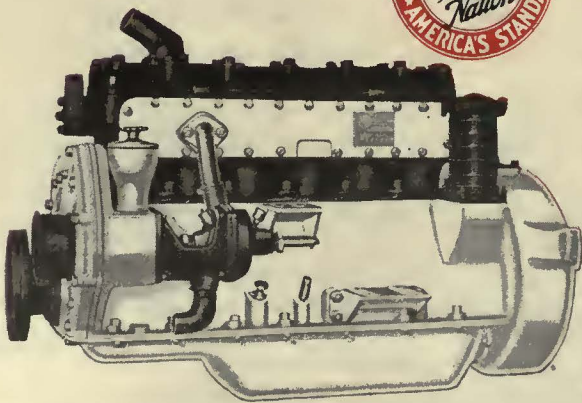
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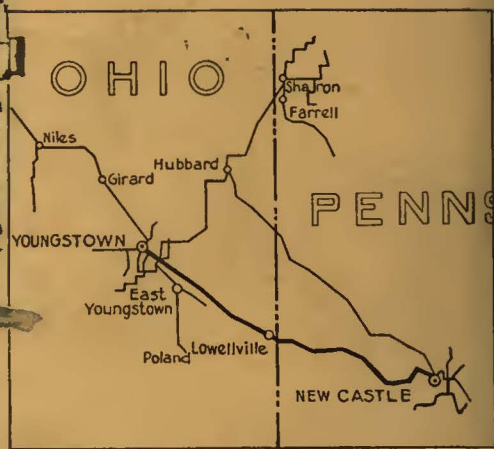
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AMERICAN CAR CO. — G. C. KUHLMAN CAR CO. — WASON MAN'G CO.
ST. LOUIS, MO. — CLEVELAND, OHIO. — SPRINGFIELD, MASS.



Again proper rolling stock has been fitted to local conditions. As to the earning power of these modern cars, let the figures speak. One-man operation was a success from the start, and the public has been well pleased.

Light-weight cars have cut costs on the Penn-Ohio System

By replacing 54,000-lb. cars with modern one-man cars on its Youngstown-New Castle line, the Pennsylvania-Ohio Electric Company has effected savings that amount to a gross return of more than 40% on the new-car investment—sufficient to pay for the cars in three years.

The new 37,000-lb. cars, which are G-E equipped, consume 2.76 kw. hr. per car-mile at the car as compared with 3.83 kw. hr. for the old cars—a 28% reduction. They have made a total reduction of 30% in the accounts they primarily affect: Equipment Maintenance, Power, and Platform Expense. Their modern equipment includes GE-265 Motors, K-35 Control, and CP-27 Compressors.



Improved car design can do much to attract more patronage and promote public good-will. The motive power must keep up schedule speeds and keep down maintenance costs. Bear in mind the success of G-E Car Equipment on many roads that are modernizing, and let G-E equip your lines.

Comparative Operating Costs Per Car-mile

	Old Cars (1922)	New Cars (1925)	Saving
Equipment	5.44 cents	2.65 cents	2.79 cents
Power	7.51	5.46	2.05
Platform	6.21	5.27	.94
Total	19.16 cents	13.38 cents	5.78 cents

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