

ELECTRIC RAILWAY JOURNAL

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APRIL 7, 1928

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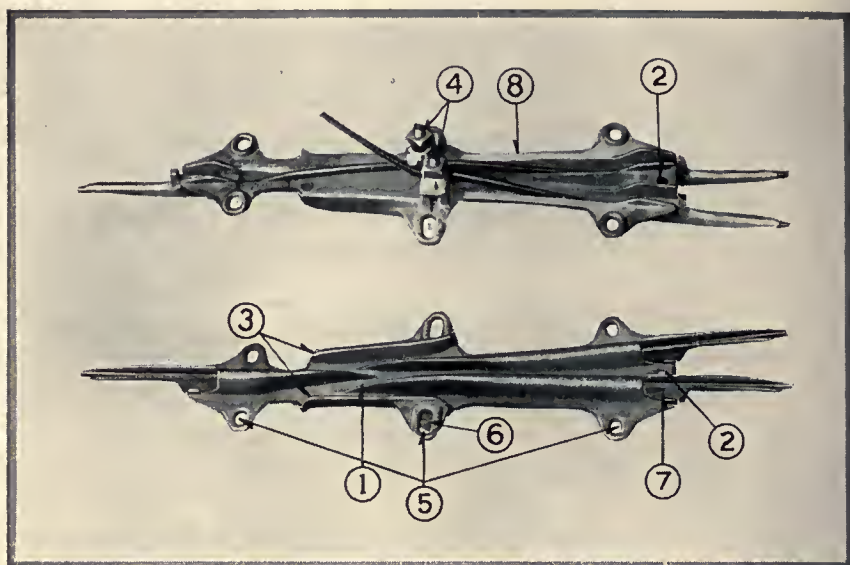
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Let us send you free sample blades, both power and hand size that will do the job.

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the United States and Foreign Countries



1928

Westinghouse

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Solving the Baffling Traffic Problem

WITH constantly increasing intensity traffic congestion presses for relief in every large city and in many small communities. As the traffic situation grows more and more acute its many complex and inter-related factors are scrambled in a baffling tangle that continues to take a heavy toll in loss of time, money and human life. The traffic problem threatens the very existence of large industrial and commercial communities as we have come to know them today.

Much has been done, however, for relief. Chicago has banned parking in its Loop area, Detroit is experimenting with express trolleys, and numerous cities have adopted the progressive signal control system. Perhaps the most outstanding work has been the series of traffic surveys conducted in many population centers. These surveys are comprehensive studies which seek to analyze the traffic and transportation problem for an entire community, to the end that remedial measures may be developed from facts instead of opinions, and may be based upon broad economic principles instead of short-sighted expediency.

Many of these traffic and transportation surveys have been presented in the pages of ELECTRIC RAILWAY JOURNAL during the past several years. A number of others are scheduled for the near future. The first section of the Detroit report, made by the Police Department of that city, is printed in this issue. This will be followed soon by an abstract of a survey in San Francisco and subsequently by the recently completed Milwaukee survey.

Digests of these reports are so made as to present only data, charts and conclusions considered of general interest and permanent value. This is a timely and time-saving service to JOURNAL readers. It brings to your desk the latest available data on the traffic and transportation problem—stripped of its bulk.

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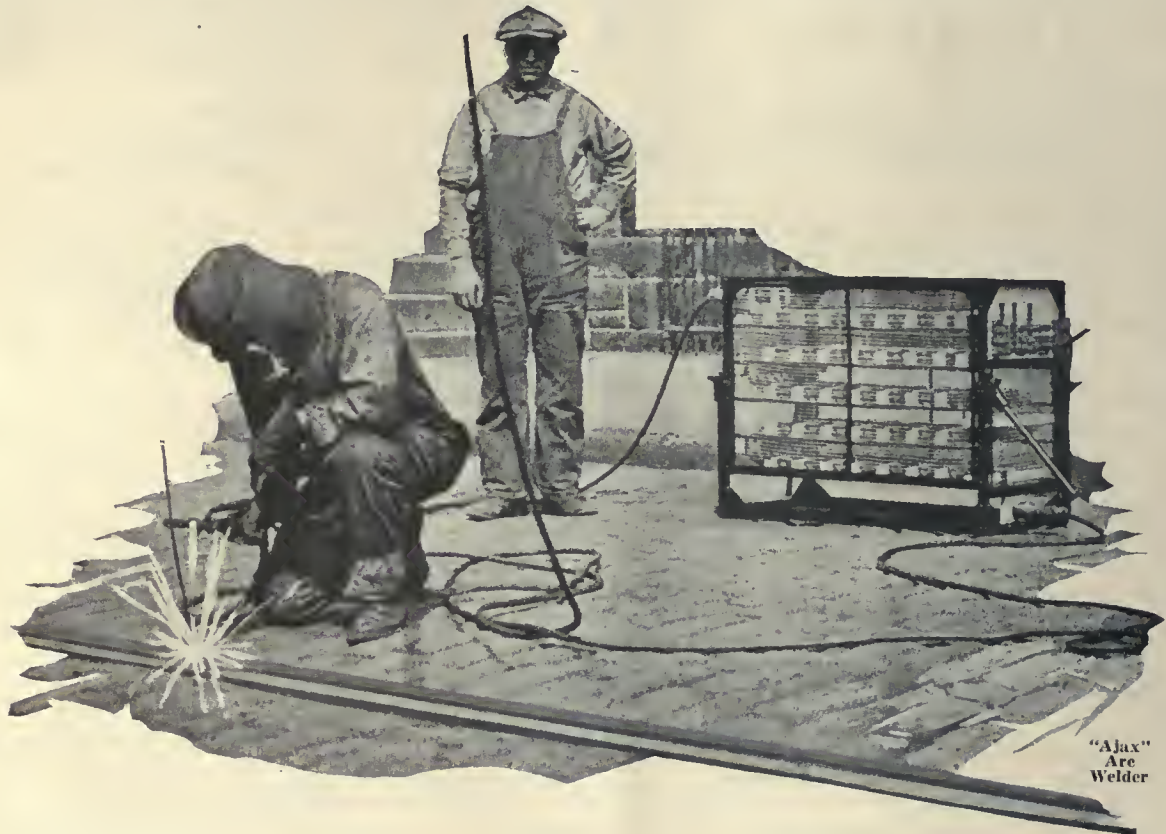
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It's cheaper to keep the rail smooth than to replace the track.

It's cheaper to keep the rail smooth than to repair the damage to rolling stock caused by rough track.

It's cheaper to keep the rail smooth than to repair the financial damage due to traffic lost because of rough riding and noise.

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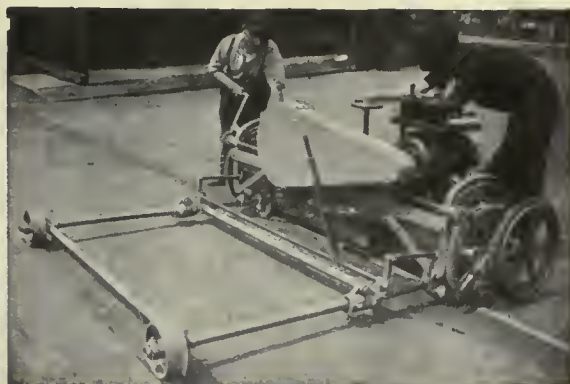
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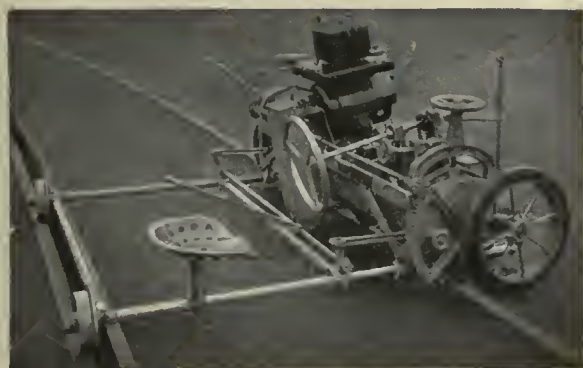
DEMANDS BETTER TRACK



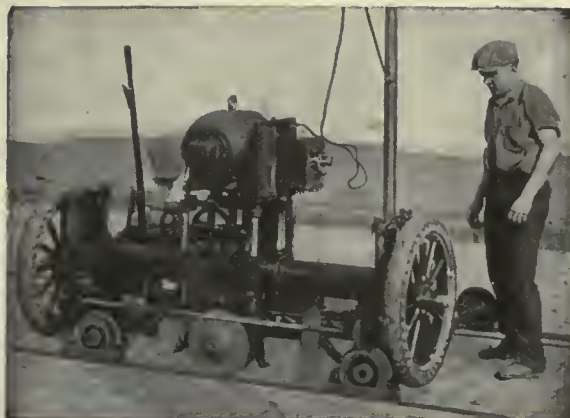
Eureka Radial Rail Grinder



"Vulean" Rail Grinder



"Improved Atlas" Rail Grinder



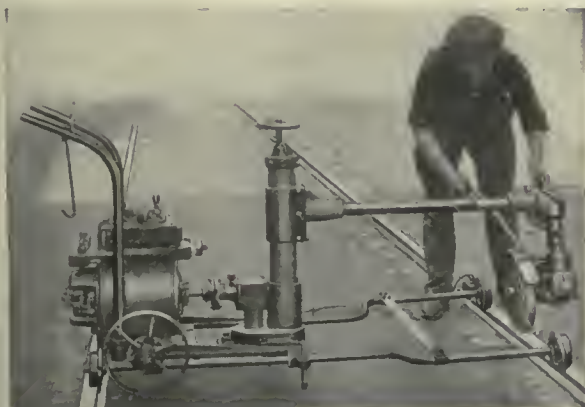
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Reelprcating Track Grinder



Eureka with Outtrigger for open track



"Midget" Rail Grinder

Modern Cars

for economy

JUST as attractive design and riding comfort are vital factors in increasing revenue, the replacement of old, heavy cars of obsolete design having high maintenance costs, will reduce operating expense.

New cars are proving a paying investment on every property we have served.



Built by—

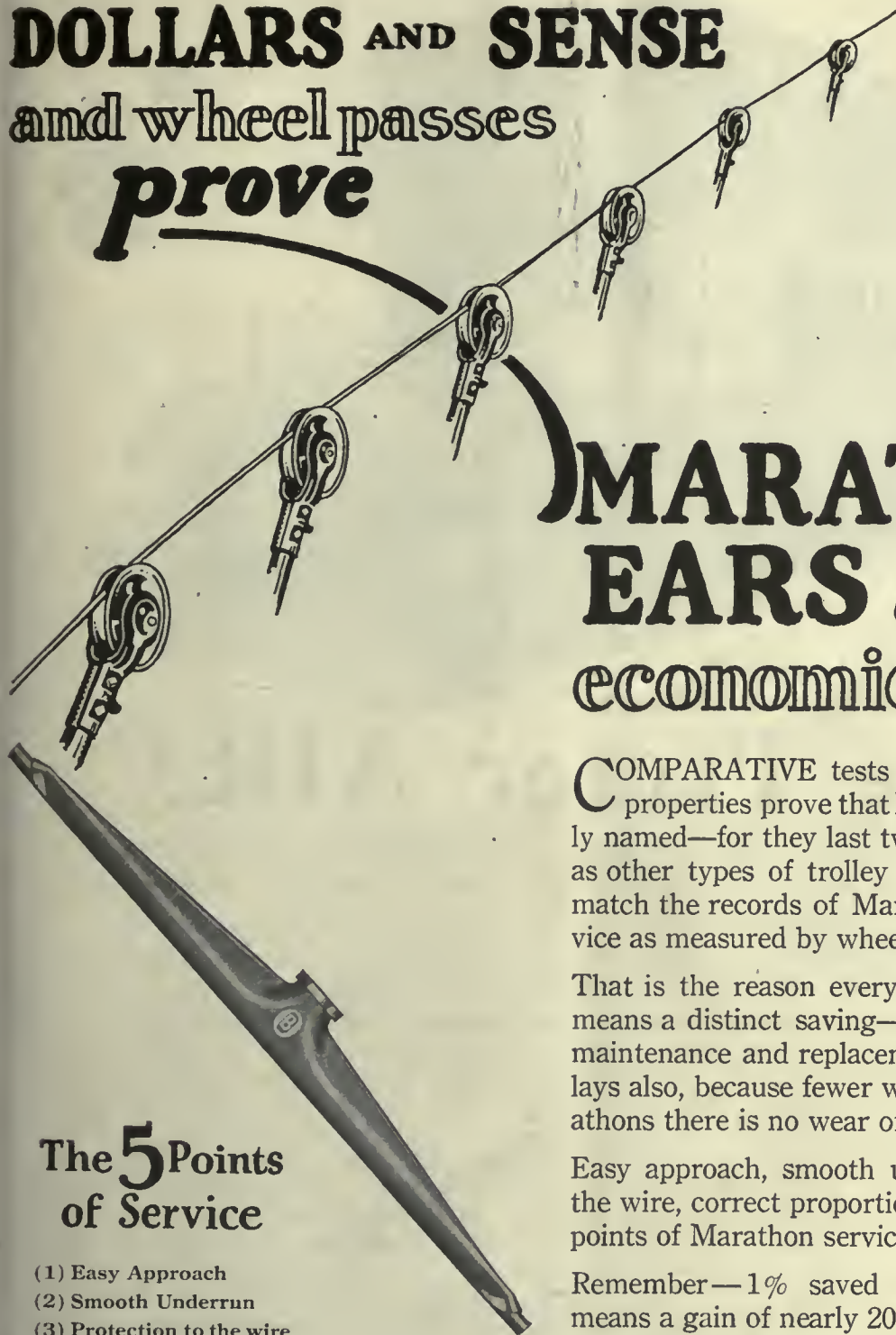
CUMMINGS CAR AND COACH CO.

Successors to McGuire-Cummings Mfg. Co.

111 W. Monroe St.

Chicago, Ill.

DOLLARS AND SENSE
and wheel passes
prove



MARATHON EARS are more economical

COMPARATIVE tests made by many railway properties prove that Marathon Ears are rightly named—for they last two to three times as long as other types of trolley ear. No other ear can match the records of Marathon in length of service as measured by wheel passes.

That is the reason every Marathon on the wire means a distinct saving—a saving in trolley ear maintenance and replacement. Fewer traffic delays also, because fewer wire breaks. With Marathons there is no wear of the wire under the ear.

Easy approach, smooth under-run, protection to the wire, correct proportioning, long life—are five points of Marathon service.

Remember—1% saved in operating expenses means a gain of nearly 20% in net earnings. Marathon Ears help toward saving the one per cent.

Full details will be found on page 534 of the O-B Catalog.

The 5 Points of Service

- (1) Easy Approach
- (2) Smooth Underrun
- (3) Protection to the wire
- (4) Correct proportioning
- (5) Extra long life

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PORCELAIN INSULATORS
LINE MATERIALS
RAIL BONDS
CAR EQUIPMENT
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VALVES



“We Prefer AIR!”

A prominent transportation company which operates a large fleet of buses prefers air brakes to other types because:

“From operating standpoint: they take hold quickly in an emergency, but do not unbalance standees under ordinary stopping conditions . . . they work equally well whether bus is fully loaded or empty . . . they do not require excessive pedal pressure and therefore eliminate driver fatigue.

“From maintenance standpoint: they do not require constant adjustment nor frequent relining . . . they have a “velvet” action that does not tend to rock the body and chassis every time the brakes are applied.”

This is representative of the opinion voiced by many operators and manufacturers as well—who have adopted Westinghouse Air Brakes as standard equipment.

WESTINGHOUSE TRACTION BRAKE COMPANY
Automotive Brake Division: WILMERDING, PENNA.

WESTINGHOUSE AUTOMOTIVE AIR BRAKES

It will take only 25 seconds
to read this advertisement.
It will be well worth your
while to do so.

another
**STRAIGHT TALK
ON TIES**

A TIE for paved track construction must be *more* than something to fasten the rail to. It must be, in fact, a whole lot more than that to be a *satisfactory* tie!

In the first place a tie has to be made of material that can be buried under the pavement for years and keep on being as good as the day it was installed. It must be low in first cost. Further, it must lend itself to ease of installation and modern production methods of construction. And it must require a minimum of concrete and other materials that go into the base.

Add to these few requirements the ones *you* think a tie for paved track construction should have.—You've written down the qualities that go into *every* Steel Twin Tie track installation.

Write today for delivered prices for your 1928 track program.

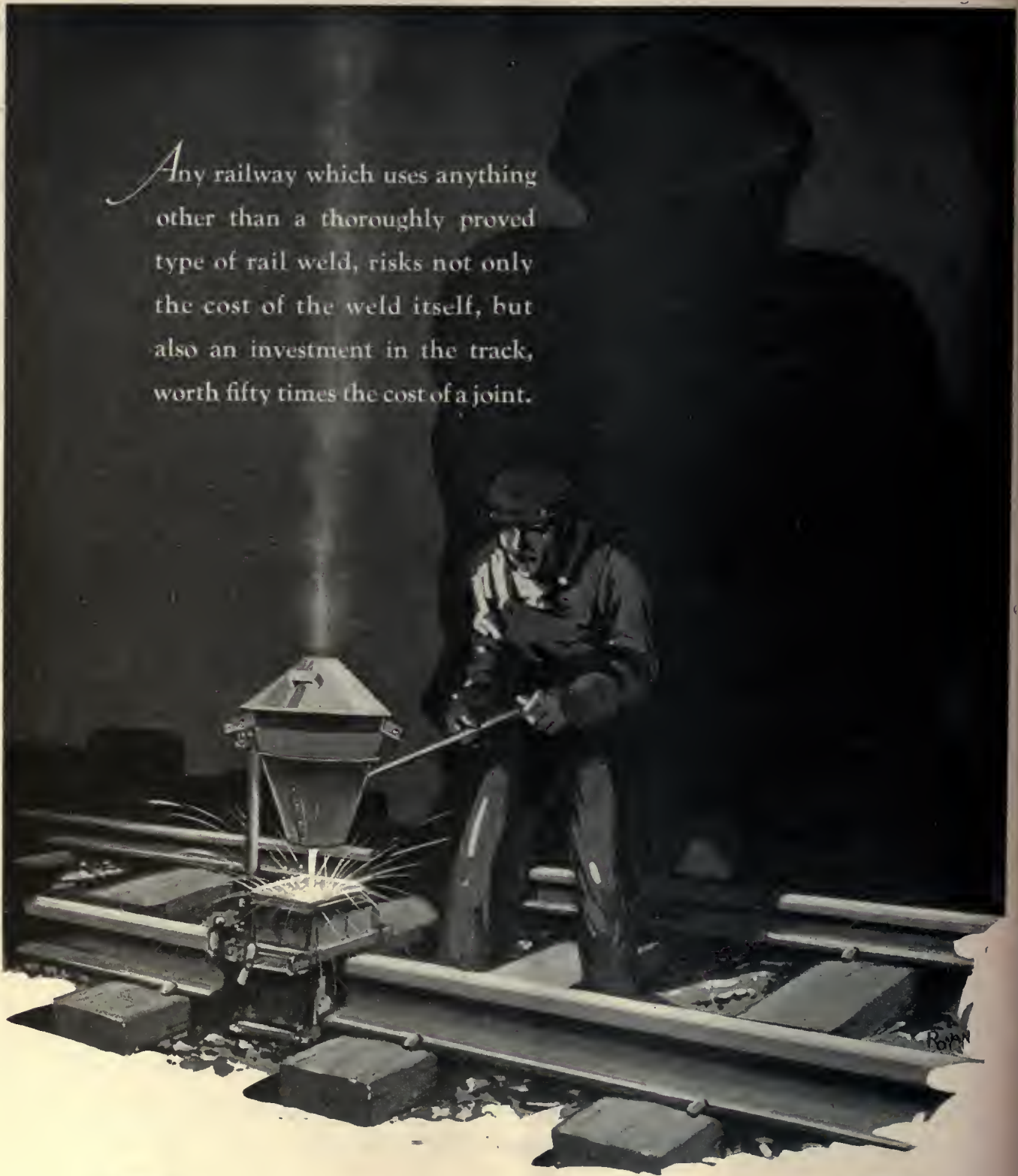
THE INTERNATIONAL STEEL TIE CO.

Cleveland, Ohio

STEEL TWIN TIE TRACK

The Base of Modernization

Any railway which uses anything other than a thoroughly proved type of rail weld, risks not only the cost of the weld itself, but also an investment in the track, worth fifty times the cost of a joint.



The Thermit Insert Weld which has been used in electric railway work since 1912, is basically the same today as then. The only changes have been in a simplification of the process and a reduction in the amount of material used, with corresponding decreases in the cost of installation.



METAL & THERMIT CORPORATION
 120 BROADWAY, NEW YORK, N.Y.

PITTSBURGH

CHICAGO

BOSTON

SOUTH SAN FRANCISCO

TORONTO



Make the most of your highways

VERSARE Six Wheel Highway Units offer the following very definite advantages from the standpoint of passenger carrying efficiency:

Practically every inch of the entire vehicle available for useful load.

No awkward seating arrangements.

The "circulating load,"—in the front, out the side.

One man operation, with 37 seated and 37 standing passengers.

Duralumin sectional bridge-truss frame construction, amply strong to stand any reasonable overloads.

Compact vehicle design, easy to handle and park in traffic.



Versare

Every convenience . . .



Showing the low step and wide front entrance to the Versare Six-Wheel Highway Unit. Utmost convenience here, with no waste space.



Above, the rear door equipped with automatic treadle.

To right, interior view showing wide aisles, and ample standing room near exit door.

General Specifications

- Engine: Heavy duty 6 cylinder 125 hp.
Electrical Equipment: Versare-Westinghouse Type 177 generator; two Versare-Westinghouse 33 hp. vehicle type motors; Westinghouse standard vehicle control equipment.
Brakes: Westinghouse Air on four wheels. Mechanical hand brakes on two wheels. Resistor for electric braking in emergency.
Axles: Versare-Eaton, both front and rear. Patented Versare Equalizer on rear truck.
Wheels: Van Type 728.
Body: Duralumin truss construction.
Doors: Front, 36 in. duplex outward folding. Rear, 29 in. dual complex outward folding with or without Automatic Treadle control.
Length: 28 ft. } overall. Wheel- { 180 in.
29 ft. 11 in. } base { 195 in.
Breadth: 8 ft. overall. Aisle width 21 in. at seat base. 24 in. at seat back.
Height: 9 ft. overall. Headroom 6 ft. 6 in.
Turning Circle: 56 ft. 59 ft.



every comfort

railroad efficiency in a highway vehicle!



Front end view of Versare body framework. Note the rigid channelling and girder trusses.

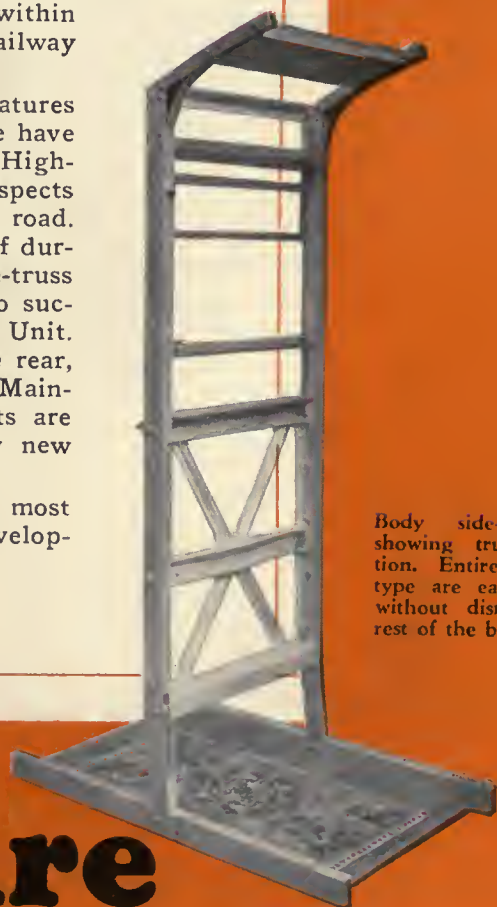
THE Versare Six Wheel Highway Unit has been produced specifically to meet requirements where highway transportation must be provided on a basis comparable to that furnished by the electric car.

It is large enough to carry peak loads in average city operation. It is economical enough to provide frequent service on the base schedule. It is fast enough, and comfortable enough to handle the long suburban runs.

Versare engineers have worked deliberately to produce a highway transportation unit that would provide the comforts demanded by the present-day riding public at an operating cost within the possibilities of existing railway revenues.

While many of the best features of current automotive practice have been incorporated, the Versare Highway Unit differs in many respects from any other vehicle on the road. It has no chassis. It is built of aluminum on the same bridge-truss principles that have proved so successful in the Versare 8-Wheel Unit. The engine is mounted at the rear, and instantly accessible. Maintenance and depreciation costs are so low as to set an entirely new standard.

Certainly this is one of the most remarkable transportation developments of the present era.



Body side-frame unit showing truss construction. Entire units of this type are easily replaced without dismantling the rest of the body.

Versare

VERSARE



Built with the lightness and strength of a dirigible; powered for speed, pick-up and hill climbing ability under full load; with gas-electric drive of a greatly improved type, and with every inch of the interior utilized, the Versare Six-Wheel Highway Unit typifies the modern highway transportation vehicle in its most advanced form.

We shall be glad to consult with any interested railway operator with a view to adapting Versare principles and designs to his own particular operating requirements.

The Versare Corporation
Albany, N. Y.



AN INSPECTION TOUR
OF THE WELL-EQUIPPED
CAR

A double protection

KEYSTONE STEEL GEAR CASES

Protect not only your gears but also your cars with Keystone Steel Gear Cases. They are tough enough to protect the gear and pinion, yet flexible enough to bend and buckle so that the car will ride over and by an obstruction in the road—thereby preventing any chance of a serious accident.

Keystone Gear Cases are made of the highest grade of soft, open-hearth sheet steel rolled for the purpose, because of its ability to resist crystallization. These cases are formed so that the halves overlap. The halves of a given type are interchangeable. Steel parts are both riveted and spot-welded together. Due to their high quality steel and their construction, they are readily straightened when bent.



Typical Keystone
Steel Gear Case

Get full data on these as well as other Keystone Equipment found on the modern well-equipped car.

Request ESSCO Catalog No. 7.

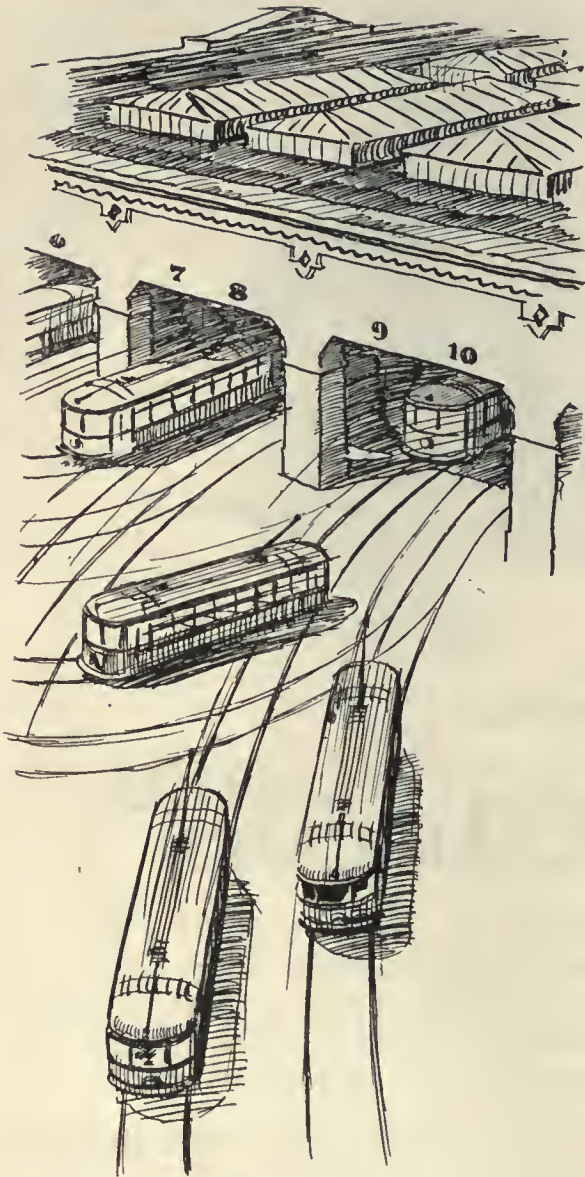
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ELECTRIC SERVICE SUPPLIES Co.

MANUFACTURER OF RAILWAY, POWER

AND INDUSTRIAL ELECTRICAL MATERIAL





On the regular car inspections— How about **your** wheels?

When cars are checked at the barns, does the report tell of badly worn wheels, inaccurate shafts and axles? Or does the report read—
“Wheels, Axles and Springs O.K.?”

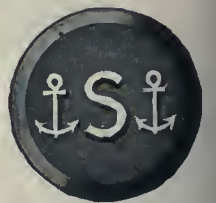
“Standard” Wheels, Axles, Shafts and Springs are made of the stuff which checks “O.K.”

*Rolled
Steel
Wheels*

*Armature
Shafts*

*Axles
and
Springs*

“FOR EVERY
TYPE OF CAR



IN EVERY
TYPE OF
SERVICE”



STANDARD STEEL WORKS COMPANY

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To
TREADLE-IZE
 is to
MODERNIZE
 and to
ECONOMIZE
 but **NOT** to
JEOPARDIZE
 the passenger

ECONOMY



WITH SAFETY

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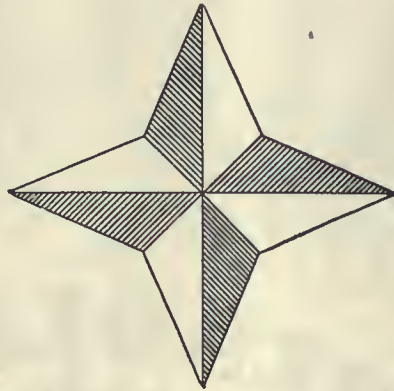
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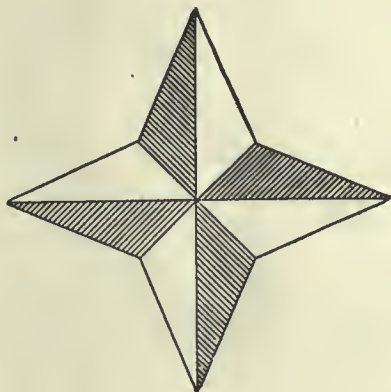
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BETTER



How does your opinion on the importance of capacity with comfort check with established fact?



Many street railway executives have responded to our suggestion and have compared the degree of their own appreciation with the established facts which the Cincinnati Car Company has gathered. Some of them found the need to act upon suggestions. Others found food for deep thought. None found room for argument.

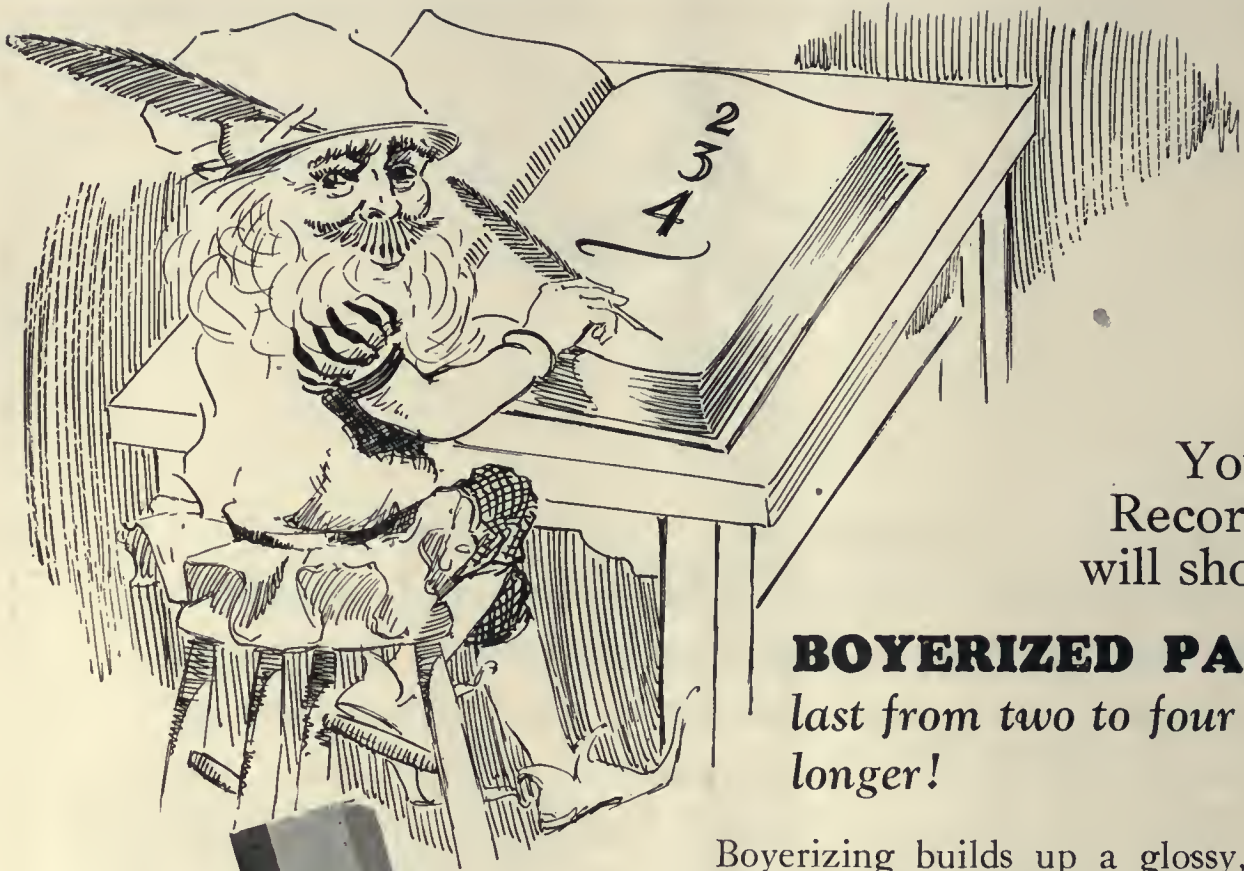
When may we have the opportunity to demonstrate the relation between capacity with comfort and mounting revenue?

Comfort from journey's start to journey's end costs less in maintenance charges. It is also the sincere and practical way to say "Thank you, ride again."

CINCINNATI CAR COMPANY
Cincinnati, Ohio

CINCINNATI **BALANCED
LIGHTWEIGHT** **CARS**

—still a step ahead of the modern trend!



Your
Records
will show !

BOYERIZED PARTS
last from two to four times
longer!

Boyerizing builds up a glossy, glass-hard armor coating that defies wear and laughs at friction! In actual practice this means you replace Boyerized parts *once* where you would replace ordinary steel parts from *two to four times*.

Make your selection from the list following. Then get our quotations.

BOYERIZED PARTS

Brake Pins	Spring Posts
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Brake Levers	Manganese Brake Heads
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The
McArthur
Turnbuckle



Bemis Car Truck Company

Electric Railway Supplies

Springfield, Mass.

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QUALITY

EVERY *International* pole bears the stamp of approval of this company in the form of the *International* dating nail. This nail demonstrates our willingness to stand solidly behind our poles and assures the purchaser that he receives sound timber, careful manufacture, strict inspection, thorough treatment; in other words, an A-1 pole.

Long life, reliable service and the economies of Creosoted Pine lines can be obtained only in fullest measure by the exclusive use of sound pine poles free from decay, carefully seasoned and pressure treated full length with high grade creosote oil.

International poles fulfill every requirement of quality. They have been time tested by more than 28 years of service with less than 1% of renewals, and are in use from coast to coast.

Illustration shows International poles in service of the Eastern Texas Electric Co. (Stone & Webster)

International Creosoting & Construction Co.
Galveston—Texarkana—Beaumont



International Creosoted Yellow Pine Poles

Grand Rapids' new cars - return 35 per cent

Thirty new G-E equipped cars have been in service in Grand Rapids since early in May, 1926.

These cars have so reduced operating expenses and increased patronage that a review of operation from June 1, 1926 to June 1, 1927 shows:

Reduction in Operating Expenses

Equipment	\$57,686.07
Power	9,379.38
Platform	43,690.45

Total \$110,755.90

Increase in revenue 15,447.58

Total \$126,203.48

Approximate investment \$360,000.00

Gross return 35 per cent.



330-73

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 71

New York, Saturday, April 7, 1928

Number 14

Telling the Intelligentsia About the Trolley

MENCKEN'S *Mercury* for April contains an article, "The Troubled Trolley," by Raymond S. Tompkins. It is a good article. The name under which it appeared was enticing, so reference was made to the back of the book where Mr. Mencken identifies his "contribs," as Franklin P. Adams and H. I. Phillips say. Sure enough, Raymond Tompkins is none other than the assistant to the president of the United Railways & Electric Company of Baltimore. Thus do their deeds find them out. Of course, Mr. Tompkins tried to approximate the Mencken manner. And in this he succeeded, so that some of his sallies may be forgiven. Since Mr. Tompkins is himself an electric railway booster his remarks about street car Messiahs may be taken with a grain of salt. Naturally he recognizes for what they are worth some of the nostrums to which recourse has been had, but he spreads the gospel of common sense. Into the article the favorable has been packed along with the unfavorable, with a tinge of history sufficient in the way it is presented to retain the reader interest. If to some readers it would seem he is at times inclined to play ducks with those within the industry, it must not be forgotten that he plays drakes as well with the public itself. The account may be read with profit, not forgetting that the author, despite his references to the ballyhoosers within the industry, is optimistic about the prospects for the restoration of the electric railway as a transportation service to full vigor and efficiency. In fact, there shines incessantly through the persiflage which Mr. Tompkins called to his aid the fact that the public is by no means ready to count out the trolley, nor are its seconds in the industry ready to toss the sponge into the ring as an admission of defeat. They have too much courage for that. And Mr. Tompkins proves it, even though he does so in a roundabout way.

The Courts Must Now Settle the Question of a 7-Cent Fare in New York

WHETHER the New York State Legislature, in its amendment to the rapid transit act in 1912, exempted the contracts authorized thereby from the general provisions of the public service law, seems to be the crux of the Interborough Rapid Transit fare case. The contention of the company is that this was not done and that the general law applying to franchises authorized by the state holds with those of the Interborough subway. In the opinion of the company, this means that the fare charged on these lines must be adequate to produce a reasonable return on a fair value of the property used in the public service, not only that owned by the company but also that owned by the city.

The fare question is now before the courts, which is the place where it apparently must be settled. If the decision is in favor of a higher fare, the city should gain equally with the company. Not only would the city profit by

receiving a return on a large investment not now earning interest, but its ability to borrow funds for further subways or other public improvements would be greatly increased. It would also gain because of the improvements which the company could make in its service. Necessary extensions of the present rapid transit system could also be financed.

Representatives of the city are opposing the company in its present application, but New York as a whole would profit quite as much as the company from a decision granting a higher fare.

Transportation That Will Sell

SUCCESS of any manufacturing business comes only when the products made will be absorbed by the ultimate consumers in volume and at a price sufficient to cover the cost and a reasonable profit. This is an economic truth that cannot be controverted. That in this respect a transportation system is no different from any manufacturing concern was brought out by E. G. Buckland, vice-president of the New York, New Haven & Hartford Railroad, in his address before the New England Street Railroad Club published in this paper last week.

Making transportation that people will buy is a complicated problem. Let there be no mistake about that. After many years of effort had not solved the problem, at least in the Massachusetts cities of Springfield and Worcester, a new method of approach was tried by the New Haven, following the restoration of the two systems to the railroad. First of all, it was necessary that the buying public should have faith in the product. This necessitated negotiations of a new kind with the public authorities. Mayors of the two cities were invited to study the problem through their representatives along with those of the railroad. The finding of these experts was that in cities of the size and character of these two, where large numbers of people had to be handled in peak hours in the densely traveled portions, no other means of transportation was so economical and so satisfactory as the street railway, properly supplemented with modern motor bus service.

With this fundamental settled the company proceeded to make an investment sufficient to produce the kind of transportation that the public wants—and that is the kind of transportation the people will buy. New cars, new track, new buses are combined with a new attitude on the part of the management and the employees, to give a brand of product with which the public has not been familiar, but which it appreciated.

Not that the New Haven was doing all this from an altruistic viewpoint. The New Haven has something to sell, apart from the local transportation in these cities. Can it be gainsaid that the vast improvement in the relations with the citizens locally will have a good effect on the general transportation situation, both freight and passenger, of the parent road? The New Haven has so

much at stake that even if it made no profit out of these local systems the good will created by the attention that has been paid to the public—its own customers—will pay handsomely in the improved outlook of the railroad itself.

It has taken a long time for the New Haven to appreciate all the possibilities in the situation. But it now has done so, and has pointed the way for other companies. There are many electric railway orphans under the control of light and power syndicates that are being carried along because they must be, and service is given half-heartedly because the franchise makes operation of some sort necessary. How much better it would be to adopt the policy of the New Haven, make the railway property stand on its own feet, and so make it return a profit, if not in cash, then in the good will it can create for the benefit of the larger system.

English Companies Admonished to Court Public Favor on Their Merits

“**A**BOLITION of the tramways” is a cry now very rarely heard in England, even the most rabid of the anti-tramways’ party having been convinced—much against their will—that tramways are here to stay, simply because they are absolutely indispensable to provide the transportation requirements of the people. Thus, says the *Electric Railway & Tramway Journal* in a recent review of the prospects for 1928. The functions of the bus have come to be better and more sensibly defined, and its adoption and use have been hastened and co-ordinated in an eminently satisfactory manner. As the English commentator sees it these are all notable gains from the standpoint of efficient public services, and their settlement enables all tramway operators to plan their future with a measure of confidence which has not existed for many years past. The results of this more healthy and better feeling are making themselves apparent on all sides. All the large tramway undertakings, and many of the smaller ones, are adding freely to their rolling stock, or are re-conditioning their old cars, being convinced by the stern logic of facts that it is only by becoming thoroughly up-to-date in that respect that they can hope to live and thrive. It is recognized that passengers want, and will have, comfort if they are to be patrons of the tramcars, hence the movement in the direction of transverse seats and close attention to upholstery. The buses give these refinements, and the cars must do likewise if they are to compete successfully.

In England, as in the United States and Canada, efforts are being made to augment the speed of the cars, and something has been accomplished in that respect, but, as the review points out, much more needs to be done by cutting out redundant stops and by adopting more efficient methods of loading and unloading before speeds can be deemed to be satisfactory. Again, as in the United States, while the movements in the directions just indicated are highly satisfactory so far as they go, there are scores of other changes and improvements which could be—and it may even be said must be—made before the tramways can be said to be doing justice to themselves and demonstrating to the full the numerous and incontestable advantages that they possess as an efficient means of public transportation. The admonitions of *ELECTRIC RAILWAY JOURNAL* are reflected by the reiteration of its British contemporary to the effect that the English companies must show that their industry is dynamic and not static, that they are out to please the public, and that they court public favor on their merits and not on sufferance.

Changing Aspects of Transportation in New Jersey

MUCH progress has been made by the Public Service Corporation of New Jersey on its program for co-ordinating railway and bus operation. The work done during 1927, which is reflected in the annual report of the company, digested elsewhere in this issue, shows the extent to which the process has been carried. During the year there was an increase of 29,822,141 passengers over the number in 1926. This was due in part to the normal increase in traffic in the rapidly growing territories served and in part to the acquisition of bus lines from independent operators, the putting of new lines into service, the extension of routes and the starting of lines giving a higher grade of service at a higher rate of fare. In all, 627,153,013 passengers were carried, 266,079,948 of them by bus compared with none so carried in 1922 and only 1,952,059 by bus in 1923. Thus is the extent of the growth of the use of the bus by the company reflected in the official figures. This makes the company the third largest in the world operating as a single unit. It is surpassed as a bus carrier only by the systems in London and Paris.

In improving the railway and bus properties \$5,973,531 was spent during 1927. This certainly is a big sum, but the Public Service is a big system and it is undergoing significant changes. On no other system in the country are the changing aspects of the industry better reflected than on this state-wide system, which includes city, suburban and interurban operations.

Hook Up to the Reader's Interests

MOST electric railway managements are now alive to the fact that the great advantage of newspaper advertising is reader interest. Unfortunately, not all of these same managements appreciate the fact that unless the messages take on the color of news they are not welcomed and are far from immediate in effect. Consequently, the very purpose for which the space was bought and paid for is defeated and in the medium which, all things being equal, should insure instantaneous attention. Opposed to this waste of words and money on the part of some railways, is the carefully poised newspaper copy of other companies which frequently effects a tie-up between the message in the advertisements and the vital interest of the community. It would appear that these companies are buying space wisely and winning customers effectively.

For example, the publication of the electric railway schedule to reach a local store on “dollar day” makes more of an appeal to the bargain hunter than statistics on railway mileage last year or last month. A picture of the comfortable seats in an interurban which runs direct to the playhouse showing Richard Barthelmess in the “Patent Leather Kid” accompanied by some teaser copy is a bigger inducement to “ride the trolley” than the economics of railway riding compared with that of competitive agencies. Similarly, an invitation to inspect new cars “today” is a more forceful selling argument than mere statements on safety, speed and economy of car riding. Not that the importance of these features in railway operation is to be minimized; but to attract the attention of the hurried newspaper reader who can afford only a very limited part of his day to the reading of news, the railway story should be tied to the reader's own interests.

An Often-Neglected Way to Reduce Costs

IN THESE days electric railway executives are exerting every effort to effect operating economies to offset decreasing revenues. Very few, however, really give consideration to the matter of fire insurance as a means of reducing their operating costs. In the matter of housekeeping alone, many thousands of dollars in insurance premiums could be saved annually without involving a large expenditure. Keeping premises clean and in order, the proper distribution of approved waste cans, fire extinguishers and sand pails, and the substitution of approved metal lockers for wooden lockers involve little expense, while the reduction in insurance rates thus effected is important.

The prevention of freezing liquids used in fire protection apparatus such as fire extinguishers, water pails and stand pipes, and the enforcement of "No Smoking" rules in car shops and carhouses, involve little, if any, expense; yet they have a direct bearing in reducing insurance rates.

The installation of properly approved sprinkler systems in carhouses and car shops probably offers the greatest saving in fire insurance premiums. In many instances, a sprinkler installation will pay for itself in from three to five years. In fact, today nearly every concern selling sprinkler systems will install complete equipment and accept in payment therefor the annual savings in insurance premiums.

As pointed out in an article in this issue by O. H. Bernd, the Des Moines City Railway, by the adoption of these principles and by carrying out a campaign among the workmen for better housekeeping, has been able to reduce its annual insurance costs \$6,315, or 44.4 per cent. Even if it were found necessary to employ a man who would devote his entire time to this one thing, and to pay him the entire saving in premiums, it would be worth while on account of the greater feeling of security and reliability of service that will be obtained. Though the anticipated fire never may happen, still the removal of potential causes goes a long way toward insuring that it cannot under any conditions disrupt the service of the road and take away much-needed revenues.

Make It Easy for the Public to Ride

REGRETS often are expressed that street railway traffic gradually is being confined to necessity riding. Certainly there is a trend in that direction. Those who bemoan the trend most loudly, however, not infrequently are the very ones who are doing least to counteract it. For one thing, efforts to encourage the casual rider to use the street car have been sadly lacking in many American cities. Far too little has been done to tell him how to use the service.

At least in the medium-sized or large cities nearly every street car carries one or more signs of some sort to tell where it is going. The signs do not always give much information. Often they are too few, they are not prominently displayed, and the lettering is too small for legibility. Inadequate illumination is provided, and all too often the signs are old and dingy. Even the largest, most legible and best illuminated ones give only meager information as to where the car is going. Admittedly it is difficult to give a full description of the route on a sign. The deficiency has been met in some places by distributing maps of the system showing just where the various routes run. This practice is widely followed in Europe. In this country one seldom sees such a system map. Abroad it is common practice to place

at prominent points in the street, signs giving the names or numbers of the car routes that pass a given locality.

All too often it is argued that signs are of use to the stranger only and that the resident of the city has virtually no use for them. It is true that they do not make much difference to the person who knows, just where he wants to go and how to get there, and who already has decided to go by trolley or bus. But even the old resident, as soon as he gets off his beaten track is little better acquainted with the routing of the system than is the stranger in town. Many a person who would patronize the transportation system if he knew more about it actually uses some other vehicle, probably a taxicab. He is willing to spend a little more money rather than take the trouble to find out how he can get to his destination by street car. He is a potential rider and his patronage could be secured by a few simple efforts to sell him the service. If the non-necessity riding is to be sold, the company must do as progressive business houses do and give the purchaser a full description of the product that is for sale.

Careful Training Results in Safety

ONE is appalled to learn that during the last five years 115,000 persons have lost their lives accidentally, more than 3,000,000 have been injured and accidents are increasing about 2,000 annually. In isolated instances a week devoted to safety parades and speeches brings gratifying results, but to have more than a transient effect it is necessary to have a well-planned campaign that continues and an organization always on the alert to keep safety before the public.

In a recent United States Supreme Court decision is a constructive suggestion for future safety at grade crossings. A man, who was killed while crossing a railroad track, heard neither the train nor any other signal and took no further precaution. The court held that he did so at his own risk. To take every precaution necessary was his duty, according to the ruling, so that his own negligence caused his death. It was a "standard of conduct" the court was dealing with "and when the standard is clear it should be laid down once for all by the courts." Many avoidable accidents at crossings or in streets are directly attributable to the wanton neglect of "further precautions." Some well-informed authorities go still further and hold that there is no such thing as an unavoidable traffic accident.

In conducting an inquiry into an interurban accident some time ago a Public Service Commission made no drastic recommendations but did urge greater caution on the part of the general public and common carriers at all railroad crossings, insisting that all existing speed regulations and signals be obeyed and used.

Fortunately, accidents on interurbans and street railways are rare and not only, as some one tersely concluded on looking over the statistics, because an erring motor-man "must answer to a stern boss," but also because an effort has been made to teach the motorman the ways of the motorist. In this way the human machine is developed to operate at the critical time when the careless pedestrian or motorist neglects his own safety.

In reporting the progress of its national highway safety campaign the American Road Builders Association stated that more than 200,000 persons pledged themselves to use courtesy and caution on the highways this year. Such a pledge implies mental alertness, sound reasoning and a "standard of conduct." Its slogan is short in preachment. May it be long in practice.

Detroit Survey

Develops Basic Traffic Data

An improved traffic signal system, reasonable parking restrictions, distribution of traffic, pedestrian regulation and more efficient utilization of transportation vehicles are proposed to give relief

PART ONE



Triple parking, preventing the use of three travel lanes, is a serious parking law violation. The two offenders in this case are jitneys

RECOGNITION of the need for reducing traffic hazards and the economic losses due to traffic congestion, and the possibility of making more efficient use of its streets, prompted the city of Detroit, Mich., through its Police Department, to conduct an extensive traffic survey which was recently completed under the direction of A. T. Waterfall, chairman of the Mayor's traffic committee and third deputy police commissioner. The actual work of the survey was handled by Harold M. Gould, engineer in charge. He was assisted by H. S. Simpson, traffic engineer for the Mayor's traffic committee, and an organization built up by these two engineers. The work was started in October, 1926, and the final report submitted in September, 1927.

An appropriation of \$30,000 for conducting this work was made by the Detroit Common Council upon the recommendation of Mr. Waterfall. There have been many suggestions for the improvement of traffic in Detroit, most of them mere expressions of opinion and not supported by facts. Along with these came demands for street widening, paving, and numerous

other items involving large expenditures. Extensive street improvement programs were suggested by some city officials, even though Detroit was fast approaching its bonding limits. This survey was therefore suggested as a means of studying the city's traffic problem as a whole, with a view toward the establishment of definite policies that would bring about relief. It was felt that Detroit, as the center of the automobile industry, should take the lead in the analysis and amelioration of the traffic congestion problem.

As a result of preliminary studies it was estimated that Detroit, in common with most large American cities, is less than 50 per cent efficient in the use of its streets, and that the annual economic loss due to traffic congestion

and delays is more than \$30,000,000. The report of the survey is divided into two parts, each separately submitted. The first part includes surveys of alley traffic, street parking, garage and parking lots and studies of economical vehicular speed and downtown business district traffic flow. The second part of the report includes studies of garage and parking lot

AN important purpose of the report was to collect and present basic facts regarding traffic conditions so that these data might be available for judging the effectiveness of various traffic relief measures proposed.

facilities outside of the downtown business district, night street storage of vehicles, freight and merchandise handling and transportation, cruising taxicabs and private automobiles, pedestrian control, school crossing protection, accident statistics and their use, travel habits of representative groups of the population, traffic direction and volume, trends of business and building development and a summary of suggestions made by individuals and organizations regarding improvement of the traffic situation. Numerous exhibits, charts, diagrams and tables were prepared from the data obtained. They proved valuable in showing the conditions as they actually exist and in dissipating popular fallacies regarding traffic matters.

THREE GENERAL RELIEF MEASURES PROPOSED

General measures for improving traffic movement, recommended by the report, group themselves under three headings: First, a traffic signal system that assists in producing a uniform fluid movement of vehicles and at the same time provides ample time allowance for pedestrians; second, regulations including reasonable parking restrictions, maximum use of travel lanes, distribution of traffic by the use of by-pass streets around congested centers, and pedestrian movement; third, a more efficient utilization of existing transportation agencies, including the motor car, bus and street car, through co-ordination and such measures as the express car experiment on Jefferson Avenue, operation of trucks at night, etc.

The report suggests further that merchants and truck operators make every effort to load and unload freight in alleys. It recommends the prohibition of alley parking of private automobiles and blocking of alleys by building construction. It suggests that numbers and names of business firms be provided at the alley entrances; that a strict observance of the parking provisions of the present ordinances be procured, especially during rush hours; that city departments, public utilities and other interests endeavor to arrange their field work so as to avoid partial blockade of travel lanes; that all vehicles be parked parallel to the curb, even in loading and unloading; that the present automatic signals on Cass Avenue be re-equipped as platoon-type operated signals for an extended test of this signal method, and that additional automatic signal installations be suspended until the above mentioned test has been completed.

A test of the combination express trolley car and local bus service, which is now under way on Jefferson Avenue, was recommended as a means of improving the



An example of the absolute disregard of "No Parking" signs by some motorists

speed and convenience of public transportation service, at the same time reducing traffic congestion. Other specific suggestions included in the report are that unpaved alleys serving stores and business houses be paved; that consideration be given to night illumination of alleys as a means of increasing the use thereof, both for trucks in the business districts and motor cars in the residential districts; an attempt be made to increase the use of parking lots and other off-street parking spaces; that an ordinance be enacted prohibiting street parking of vehicles between the hours of 3 a.m. and 6 a.m. to reduce thefts and accidents; that merchants study the matter of night pick-up and delivery of freight and merchandise; that space be assigned for taxicab stands, and that automatic call boxes be installed to reduce the amount of taxicab cruising. The report recommends a test to regulate pedestrian movement, including marking sidewalks into three distinct lanes in an attempt to better pedestrian traffic flow. It suggests that automatic traffic signals be installed so that pedestrians can observe them easily, and that an accident analysis committee be formed to apply actively accident prevention remedies through detailed analyses of the monthly reports of the Accident Investigation Bureau. Other recommendations are brought out in the presentation of the detailed information within the report.

One thing upon which particular stress is laid is the necessity for a determination of policy as regards the installation of automatic traffic signals, that is, whether the ultimate result is to be the aggregate of signalled intersections or a gridiron of signalled routes; the former producing frequently interrupted traffic movement on any possible route, and the latter, if progressive signals are employed, aiding in the procurement of uniform and uninterrupted traffic movement on certain important arterial routes.

MANY UNFAVORABLE CONDITIONS IN ALLEYS

Although Detroit's alley system is adequate to permit segregation of passenger-carrying and freight-carrying vehicles in the business districts, the absence of street numbers and in most cases of firm names on alley entrances of business houses, has led to their improper use for storing private automobiles, and building construction materials instead of for the loading and unloading of freight-carrying vehicles to relieve street congestion. Some buildings abutting on alleys were found to have no alley access; and some business houses used the street for freight handling because their elevators were located



Private automobiles parked in alleys for long periods obstruct the movement of commercial vehicles



Detroit has adequate off-street parking facilities, but motorists do not use them extensively

The survey of available garages and parking lots in the Loop district showed 22 garages and 106 parking lots with capacities of 5,735 and 7,660, respectively. Unused spaces averaged 6,000 each day. Three bus routes were proposed to serve the garages, parking lots, stores and buildings.

adjacent to streets. As a remedy, the report suggests an ordinance providing for placing street numbers and the names of business firms occupying the premises at alley entrances, and that business firms whose premises abut on an alley provide adequate entrances as soon as possible; that sidewalk freight elevators be moved to the alley entrances wherever such an alley is available; that alleys be kept clear of rubbish and garbage; that the blocking of alleys by building construction materials be prohibited; that merchants and truck operators load and unload freight in alleys wherever facilities are available; that when trucks are stopped for any purpose in alleys, care should be taken to avoid blockading, and that parking of private automobiles in alleys be prohibited.

The report calls attention to the need for strict enforcement of parking restrictions in the congested business district. To determine the volume and characteristics of street parking a field survey was made in 48 selected sections of the city over a period of nine hours. The field men traversing the business section every 30 minutes recorded the license numbers of all parked automobiles, whether single or double parked, whether they were parked legally or illegally, and in addition noted the location of horse-drawn vehicles. This information showed that many of the permissive parking spaces in the downtown district were occupied for periods greatly in excess of the legal time limit; also, that many automobiles were parked where parking was prohibited altogether. The maximum demand for curb parking space occurred between 1:30 and 2 o'clock in the afternoon, at which time there were recorded 4,715 vehicles parked,

whereas the permissive parking space numbered about 3,753. The influence of the one-hour parking limit was very pronounced in that out of a total of 32,450 parked vehicles recorded during the day, 25,185 were parked for one hour or less, leaving a balance of 12,265 vehicles which exceeded the one-hour limit.

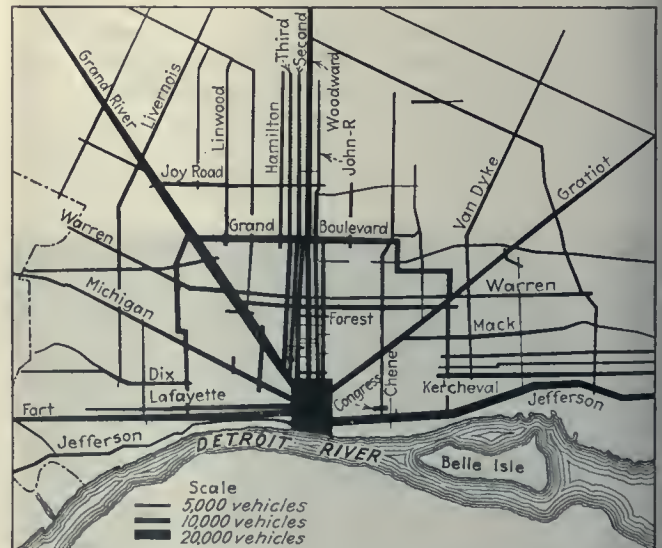
Of 195,078 persons who were tallied at 27 stores during three days in November, 1926, 36,272, or 19.1 per cent, came by private automobiles. Of this number 20,393 parked their autos in the street and 15,879 in garages or parking lots. The other modes of transportation used were the motor bus or jitney, which accounted for 24.2 per cent, and the street car, which accounted for 56.7 per cent. The survey proved conclusively that storage of vehicles on business streets is not justified.

OFF-STREET PARKING FACILITIES ADEQUATE BUT NOT USED

A survey of the available garages and parking lots in the business district showed 22 garages and 106 parking lots, with capacities of 5,735 and 7,660 vehicles, respectively. The combined capacity totaled 13,395 cars. While the street parking survey showed 7,309 automobiles parked for periods in excess of one hour, the garage survey revealed that on the first day there were 5,524 spaces unused in garages and parking lots and on the second day 6,578. It is assumed that the average of 6,000 unused spaces in garages and parking lots would be ample to accommodate the 7,309 illegally curbed parked vehicles whose average storing time was approximately three hours.

Strict compliance with the traffic ordinance, it was held, would not act as a deterrent to motorists driving into the downtown business district, but would simply have the effect of changing the storage habit of those who now store their automobiles in the street.

Closely allied with the vehicular movements and parking in the downtown business district is the matter of economical vehicular movement between this district and other districts, business or residential. A study of vehicular speeds and traffic flow between the districts is



Traffic flow for twelve-hour period on the major thoroughfares

Counts were taken every day for two weeks to secure average figures and checks made at four later periods. Vehicle tallies were made also in the Loop district and the data charted.

covered in the report. An inventory was taken of the automatic traffic signals installed both within and outside of the downtown district. The data show that there were 305 locations where signals were installed, 13 from which signals had been removed and 110 for which signals had been requested. It was recommended that a fixed policy be established with respect to all signal requests, and that a study be made of each section before a signal be installed for use.

A study of four different types of signal control, namely, the isolated traffic signal, synchronous, partial platoon and full platoon or progressive system, showed that the latter type was perhaps the most desirable. Time-lane diagrams were prepared for a portion of Cass Avenue, showing vehicular movements obtained with the use of the four different types of control. The charts show a decided advantage for the progressive type from a point of speed and street capacity. The report suggested that a thorough test be made of this type of control and if found as satisfactory as anticipated that other installations be made.

Rush-hour traffic should be given special preference by keeping open for moving vehicles the full width of the pavement in the direction of greatest traffic movement. Although this is provided for by ordinance in Detroit it is not satisfactorily observed. Another disturbing factor is the obstruction of traffic by slow-moving vehicles.

Street cars using the natural highest speed lane and operating on a local stop service become low speed vehicles, and in view of the ordinance requiring other vehicles to stop with them, have a very definite retarding action on all other vehicular movements, according to the report. A speed of between 15 and 25 m.p.h. is said to be the most efficient for the flow of vehicles along a thoroughfare. Tests made on several Detroit streets showed that the average speeds were considerably lower than they should have been.

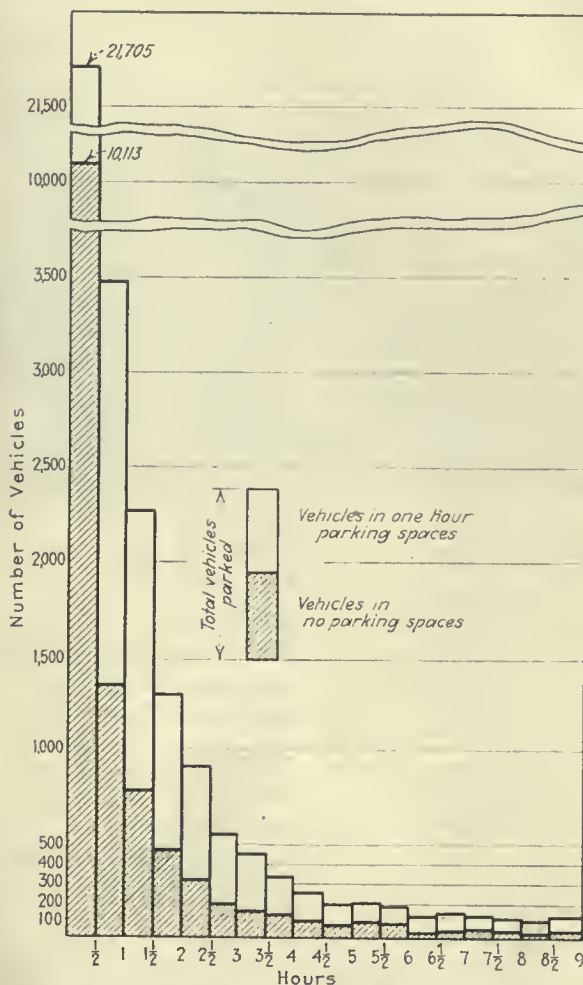
It was suggested in the report that a plan of operating street cars express with supplementary buses to give local service be tried on some route in the city. This is being done on Jefferson Avenue as described in the Jan. 7, 1928, issue of ELECTRIC RAILWAY JOURNAL. Such a combined service was expected to expedite materially the flow of all types of vehicular traffic on any street where trolley cars are operated.

TRAFFIC FLOW DATA IN LOOP DISTRICT OBTAINED

A vehicular traffic flow map shows the volume of travel on the various streets within the downtown business district. It is intended to use this map and other traffic flow data in planning the further installation of automatic traffic signals.

The following suggestions were made with respect to traffic signals and vehicular speed: That the present automatic signals on Cass Avenue be re-equipped as progressive-type operated signals for tests, preparatory to the general adoption of this type of control; that the installation of additional automatic signals be postponed until the above mentioned test has been completed and only after field tallies and analyses show that the proposed signals meet the conditions of controlled routes, rather than controlled isolated locations; and that a reduction be made

It has been estimated that Detroit, in common with most large American cities, is less than 50 per cent efficient in the use of its streets, and that the annual economic loss due to traffic congestion and delays is more than \$30,000,000.

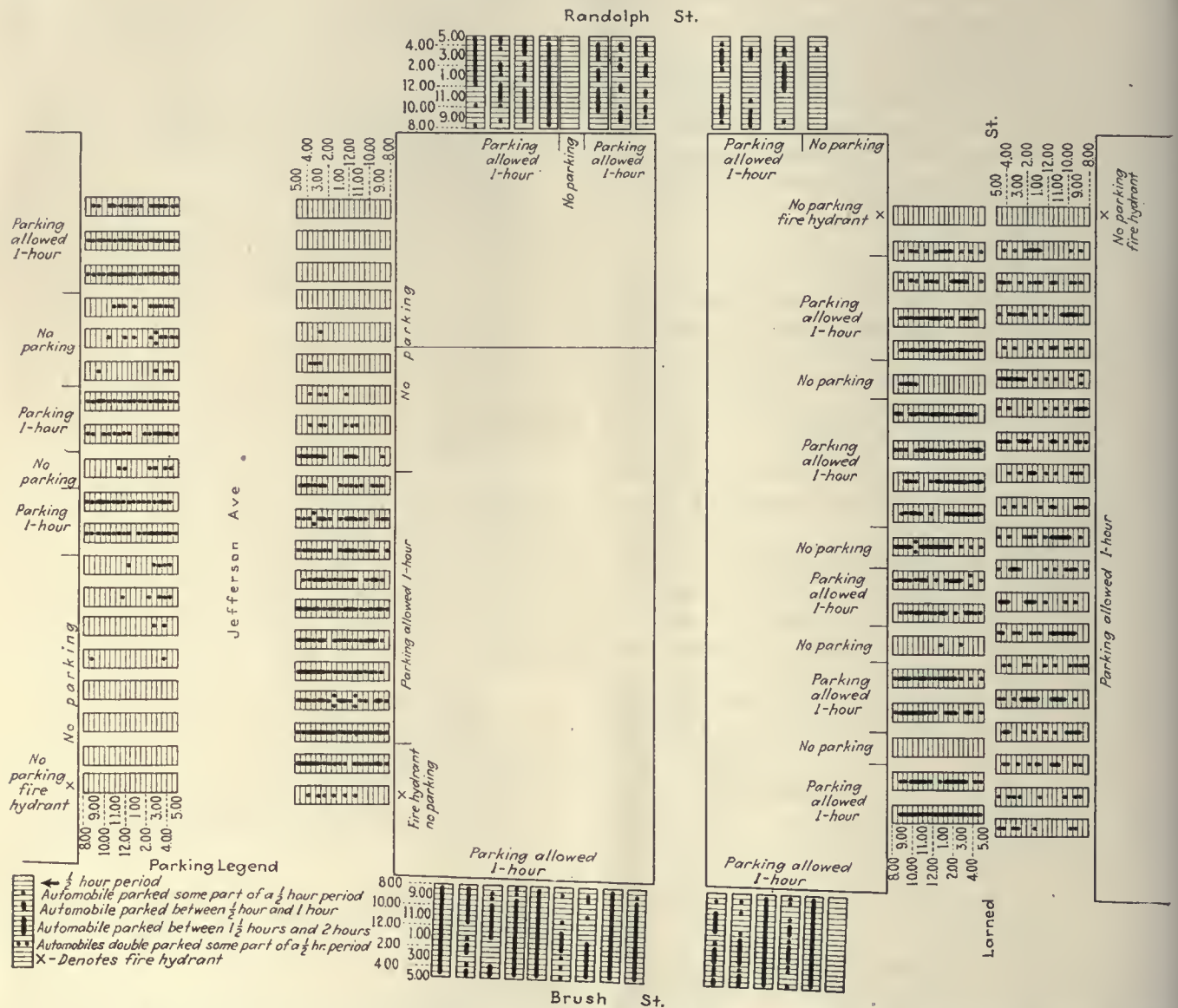


This chart shows the length of time vehicles park in the "No Parking" and "One-Hour Parking" spaces of the Loop district

in the number of stops of all vehicles, particularly street cars. In the sections outside of the downtown business district, surveys were made of garages and parking lot facilities, night street storage of vehicles, freight and merchandise handling and transportation, cruising taxicabs and private automobiles, pedestrian control, school crossing protection, accident statistics and their use, public transportation agencies, traffic direction and volume and development of outlying business centers.

Even outside the central business district, unrestricted parking was found to limit seriously the number and capacity of movement lanes. An extensive survey of garages and parking lots available showed a marked deficiency in the number needed. It was suggested that this deficiency could be met in part by the use of rear lots, vacant lots and the space between the curb and sidewalk.

Expenditures need not be made for street widening unless there is a legitimate demand for space for moving vehicles that cannot be met by existing facilities. It was suggested that private companies provide parking spaces wherever possible; that merchants of a neighborhood use collectively a near-by vacant lot; that the space between the curb and the sidewalk be used; that automobile parking be prohibited on certain thoroughfares dur-



The volume of street parking and the turnover thereof in the central business district was surveyed and the data for 48 sections charted as above. Each chart shows by half-hour periods how long vehicles were parked, vehicles parked double and those occupying "No Parking" spaces

ing certain periods of the day, and that alleys outside the business district be paved and illuminated. A chart was prepared to point out the possibilities of the use of parking lots just outside of the downtown business district to take the overflow of cars which at any time cannot be accommodated properly within the district.

Night street storage in Detroit has become a big problem in face of the increasing number of motor vehicles and the several serious drawbacks to this mode of storage. Where the number of cars owned per block is in excess of the off-street storage facilities, street parking occurs. A survey was made in twelve representative districts to determine the number of alley garage spaces, divided into vacant and rented; the average monthly rental therefor; the capacity and average amount of vacant space in public garages, and the number of night

parked vehicles block by block. The survey shows that the amount of vacant garage space is inadequate to house the vehicles which the records show were stored in the street. This condition is particularly true in districts where apartment houses predominate. On the other hand, many of the garages were nowhere near filled and the conclusion was reached that garages will not be used to capacity while free street storage is so easily procured. High rates and inaccessibility of garages are contributing causes to night street storage.

The presence of unguarded vehicles in the streets during the night is a temptation for theft. A majority of thefts occur between midnight and 6 a.m.

The movement of commercial vehicles, the control of pedestrian traffic, and the modes of travel used by 101,541 persons in reaching their homes from eleven employment districts will be discussed next week.

Of especial interest to public transportation operators!

A map showing the travel habits of 101,541 persons in Detroit will be presented in Part II of this article.

Don't fail to read it!

Gas-Electric Cars Cut Railroad Costs

Fuel and crew costs are reduced on branch lines of steam railroads by substituting gas-electric equipment

By W. R. STINEMETZ

Assistant to Transportation Sales Manager
Westinghouse Electric & Manufacturing Company

GAS-ELECTRIC cars, because of their low operating costs, are useful for the light and infrequent traffic of branch line service of railroads. Their use also stimulates traffic by providing the traveler more attractive accommodations than those of obsolete rolling stock usually assigned to steam branch line service.

To show how much a gas-electric car can save a railroad, a typical example of an average month's operation of a motor car and trailer actually substituted for a branch line steam train will be given. The steam equipment consisted of a locomotive and tender, a combination baggage car and smoker, and a passenger coach. The gas-electric train consisted of a combination baggage-smoker motor car and a passenger-trailer coach. The trains had the same space accommodations but the steam train with its locomotive and tender totaled more ton-miles. One round trip was made per day over the 40-mile line for 30 days, with the results given in Table I.

The gas-electric system shows a net saving of \$1,568 per month or \$18,816 per year, largely accounted for in three items—fuel, crew wages and repairs. This amount represents about 31 per cent of the investment for the gas car and trailer, allowing no salvage value for the steam train equipment replaced.

ELIMINATING BRAKEMAN EFFECTS FURTHER SAVINGS

Further savings have been effected on other roads by arranging the two-car train so all passengers enter or leave by one platform, and eliminating the brakeman from the train crew. One road using the system is handling the same amount of traffic as with the old four-car steam trains, and with passengers better satisfied. The average cost to run the steam trains was \$1.08 per train-mile whereas the motor train gave the same service for a



A 60-ft., 250-hp. electric car of the Philadelphia & Reading Railroad at the Trenton, N. J., station

year at a cost of 38 cents per train-mile. On the foregoing basis, one of these train units costing \$60,000 gross would show, with a daily service of 100 train-miles, a saving of \$25,550 per year, or 43 per cent on the gross investment.

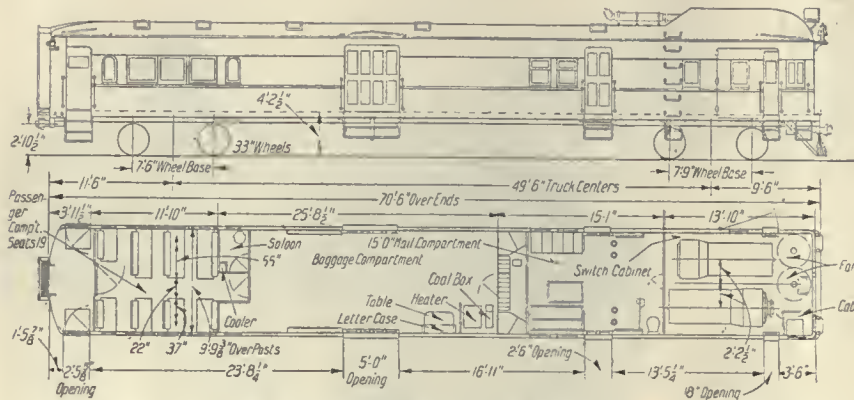
When traffic is too heavy for single power units and trailers it is entirely feasible to use multiple-unit gas-electric car trains in a manner similar to multiple-unit car operation on an electrified line. The savings which could be expected with multiple-unit gas car operation under more congested conditions are shown in the following

TABLE I—30-DAY EXPENSE RECORD OF GAS-ELECTRIC AND STEAM TRAIN OPERATIONS

	Gas-Electric	Steam
Fuel (coal or gasoline)	\$338.20	\$603.00
Lubricants.....	17.11	35.00
Water.....		10.00
Cleaning cars or engine.....	56.52	35.00
Supplies.....	6.86	35.00
Engineers' wages.....	297.72	297.72
Conductors' wages.....	288.56	288.56
Trainmen's wages.....	214.54	453.46
Firemen's wages.....		220.30
Engine house expense.....	46.87	101.00
Running repairs.....	210.36	966.00
Totals.....	\$1,476.74	\$3,045.04
Average cost per passenger-mile, cents.....	1.21	2.49
Average cost per train-mile, cents.....	59.80	123.00



A typical 73-ft., 250-hp. Brill-Westinghouse gas-electric car of the Boston & Maine Railroad



Elevation and floor plan of Lehigh Valley car arranged to handle passengers, baggage and mail

TABLE II—ANNUAL OPERATING EXPENSES FOR STEAM AND GAS-ELECTRIC OPERATION

	Steam Operation		Gas-Electric Operation	
	Cents per Train-Mile	Total Cost per Year	Cents per Train-Mile	Total Cost per Year
Crew expense.....	38.58	\$282,720	31.460	\$230,557
Fuel (coal or gasoline).....	23.90	175,113	19.090	139,879
Locomotive repairs (motor car).....	29.70	217,610	6.036	44,227
Locomotive supplies (oil).....	1.70	12,359	1.794	13,151
Engine house expense.....	7.70	56,419	2.414	17,692
Train supplies and car expense	8.00	58,616	2.753	20,172
Totals.....	109.58	\$802,837	63.547	\$465,658
Cost of yard switching and facilities.....		55,900		18,650
Total main line and yard....		\$858,737		\$484,308

comparison. The 190-mile division considered joins a large city terminal and a moderate-sized city. In addition to several through trains daily the large city terminal handles ten local passenger trains in each direction, in the suburban zone of 40 miles. The smaller city also has a suburban zone of 40 miles, and requires four trains in each direction daily. To handle the service with steam requires six Pacific-type passenger locomotives, sixteen passenger locomotives for local service and 75 passenger and express cars, with a total salvage value of \$275,000.

To maintain the same schedules with complete new gas-electric motor cars and revamped steam trailers and provide express and passenger service would require 37 motor cars at \$39,500 each and 37 revamped trailers at \$2,500 each, a total cost of \$1,554,000. Allowing a salvage value of \$238,000 for the locomotives and 38 cars the net investment would be \$1,316,000.

ANNUAL EXPENSES CONSIDERABLY LOWER FOR GAS-ELECTRIC EQUIPMENT

The annual operating expenses of the equipment, based on reliable data, are given in Table II. Here again the principal savings are in crew expense, fuel and maintenance. The standby fuel losses are eliminated and the gas car consumes fuel only when doing actual work. The large maintenance saving is due to the age of the steam locomotives as compared with the new gas-electric

TABLE III—COMPARATIVE DATA SHOWING SAVING OF GAS-ELECTRIC OPERATION OVER STEAM OPERATION

	Steam	Gas-Electric
Net investment.....		\$1,316,000
Annual operating expense.....	\$858,737	484,308
Fixed charges*.....	132,217	170,477
Total operating expenses.....	990,954	654,785
Saving over steam operation.....		336,169
Per cent saving on net investment.....		25.6
Per cent saving without fixed charges.....		28.5

*Include interest, insurance, taxes and depreciation.

equipment. This factor, however, is balanced by the higher fixed charges incurred by the net investment for the new equipment. In Table III comparative data are given showing the saving of gas-electric operation over steam operation. Using the figure of \$1,316,000 for the net investment of gas-electric equipment, the fixed charges, including interest, insurance, taxes and depreciation total \$170,477. This figure added to the annual operating expense of \$484,308, indicated in Table II, gives a total annual cost of \$654,785. The corresponding figure for steam is \$990,954, so that a saving of \$336,169, or 25.6 per cent of the net

investment, is shown for gas-electric operation over steam.

The heavy electric traction committee of the American Electric Railway Engineering Association has as one of its subjects for investigation, "Branch line electrification, and self-propelled cars and locomotives." This committee has presented much valuable data on the operation of gas-electric cars, particularly in the reports of 1925, 1926 and 1927.

Snow Costs Depend on Kind of Snow

DESPITE the popular belief that the lack of snow is a big help to the financial affairs of a street railway, the Worcester Consolidated Street Railway, Worcester, Mass., has produced figures which lend an interesting light to the situation, revealing that it is not a question of how much snow but what kind of snow.

Costs of snow removal for five years cannot be taken for a barometer of the snowfall, it was found. Some months when there is little or no snow, the snow costs are heavy due to frozen switches, and that dreaded succession of snow, rain and freezing weather.

In December, 1927, which was considered a very open month, the cost of snow removal for the Worcester system was \$3,056, less than one-third of the cost for the year before, which was \$11,794, but nearly twice as much as for 1925, which was \$1,893.

Last year February's snow removal cost was \$8,058 and in March \$4,098. In 1926 the February cost was \$31,235 and March \$5,835. In 1925, March was more like a lamb, costing only \$343, but February snow cost \$8,579. Only once in the three preceding years did the figure for either month fall below \$5,000.

Electrification Reduces Smoke Pollution

SMOKE damage to the Chicago Art Institute has been measurably reduced, according to a statement by the superintendent of the Institute, since the electrification of the Illinois Central Railroad suburban service. The through trains are still steam-driven. Approximately 4 tons of soot were taken from the building's roof during 1927, whereas during the previous year 13 tons were removed. The smoke and cinders falling on the roof of the building and seeping inside deface costly paintings, statues and fabrics, and the thin coating which forms on everything results in disintegration. The reduction of smoke pollution is of great value to the Art Institute.



Ventnor Heights bus at Albany and Atlantic Avenues, where connection is made with the street cars

Feeder Bus Service Stimulates Riding

Operation of three routes in recently developed residential districts has brought Atlantic City & Shore Railroad a substantial volume of new business

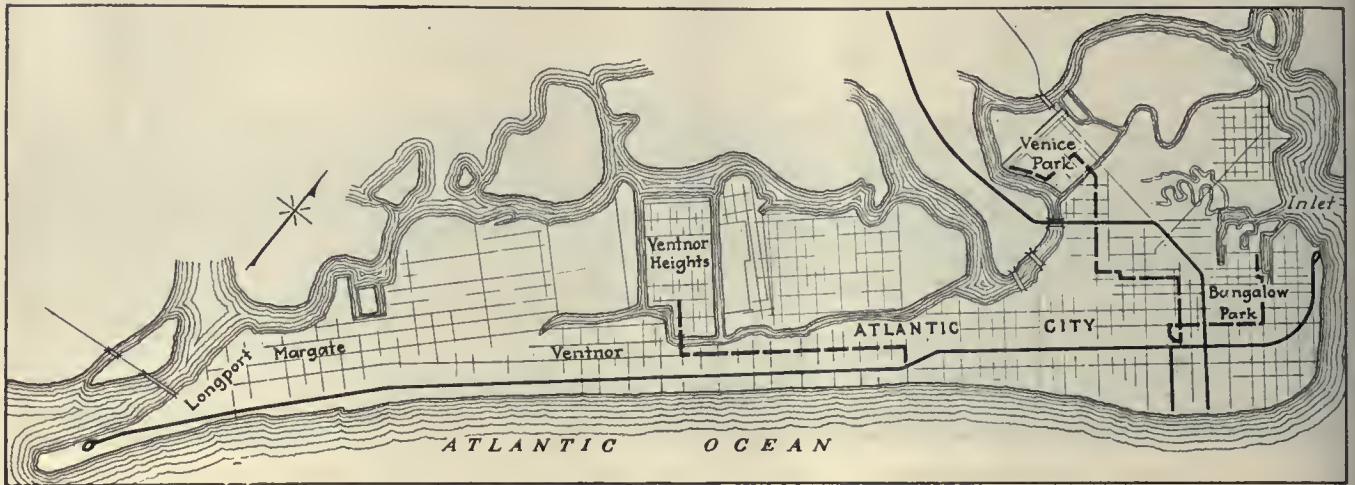
FEEDER bus service established last summer by the Atlantic City & Shore Railroad, Atlantic City, N. J., has proved a valuable adjunct to the rail lines. Two of the three bus routes operated by this company serve newly-developed residential districts, while the third is partly a replacement of a former car line and partly an extension into new territory.

The geographical arrangement of Atlantic City is

unique, lying, as it does, on a narrow strip of sand between the Atlantic Ocean and extensive salt marshes. The railway operates two principal car lines. One is an interurban called the "Shore Fast Line" which starts at the Boardwalk in Atlantic City, crosses the marshes to the mainland and continues thence to Ocean City. The local car route is somewhat L-shaped, about 8 miles long, extending from Absecon Inlet on the north via Maine



Terminal of the Venice Park and Bungalow Park bus routes opposite the Pennsylvania Railroad Station



Three bus routes operated by the Atlantic City & Shore Railroad supplement the local trolley service

and Atlantic Avenues to Longport on the south. The center of the business district of the city is about 1½ miles from the northern end of this car line.

Throughout the greater part of its length the city is so narrow that the car line on Atlantic Avenue is within easy walking distance. At its northern end, however, the width is somewhat greater. The short leg of the L of the car line serves a portion of this district, and another car line on South Carolina Avenue formerly served another portion of the territory lying west of Atlantic Avenue. It is this second car line that has been replaced by a bus line, except for a short section between Atlantic Avenue and the Boardwalk, where a shuttle car is operated. The bus line starts in front of the Pennsylvania Railroad Station, west of Atlantic Avenue. A second bus line starting from the same point serves an adjacent district which has been newly developed. These routes are called Venice Park and Bungalow Park. The third bus route, Ventnor Heights, is located some distance away. This connects the new suburban district of that name with the car line at Atlantic and Albany Avenues.

The Venice Park bus route, the most important of the three, began running in May, 1927. In February, 1928, approximately 750 passengers per day were being carried. The route is 2.2 miles long and the running time is thirteen minutes. The schedule speed is 10.2 m.p.h. A total of 167 bus-miles per day are operated on this route.

The Bungalow Park bus route, which serves an ad-



Passengers alighting from an inbound bus at North Carolina and Atlantic Avenues

acent neighborhood, was started at the same time. Its length is 1.3 miles and the running time nine minutes. Schedule speed is 8.65 m.p.h. About 280 passengers per day are carried on this route and the buses operate 88 miles.

The Ventnor Heights bus route was established in September, 1927. At the present time 240 passengers per day are being carried and the buses operate 126 miles. This route is 1.75 miles in length. The running time is eleven minutes and the schedule speed 9.55 m.p.h.



At left—A small sign in the rear window makes it easier for the passenger to determine on what route the bus is operating. At right—When not in service buses are stored in an unused bay in the carhouse

Operations are conducted under the name of the Central Transportation Company. This was derived from the name Central Passenger Railway, an underlying company. Fares on the buses are 10 cents with free transfer to the cars. The car fare is 7 cents and a 3-cent charge is made for transfer to the buses. The revenue per bus-mile averages about 30 cents, while the cost of operation is slightly over 33 cents per bus-mile. It is expected that the revenue will increase as the districts served build up. While these buses act principally as feeders to the rail line, they have actually developed traffic that did not previously exist.

The company has a total of seven buses. Of these, six are 21-passenger Yellow model X buses and one is a 29-passenger Yellow model Z. In addition to the standard equipment of roll signs in front, each bus carries a small route sign in the rear window. This has proved particularly useful because the Venice Park and Bungalow Park lines have their terminal west of Atlantic Avenue in such a location that most of the passengers approach from the rear. The rear sign makes it possible for an approaching passenger to tell whether it is his bus or another which is standing at the terminal.

The buses are housed in one bay of the company's car-house. Maintenance and inspection work is done in the railway shops. For this purpose the buses are run over the pits in the same way as a car. The work is not done by the regular shop men, however, but by a special group of bus mechanics. When in service buses are operated by former car operators.

Light Interurban Has Good Record

ONE of the first light-weight interurbans to be placed in service anywhere is car 103 of the Princeton Power Company, operating the interurban connecting Princeton, W. Va., Bluefield, W. Va., and Graham, Va. The car, which has been operated continuously since 1917, is still in excellent condition and should remain in service for many years more, according to S. J. Evans,



Light-weight interurban car of the Princeton Power Company which has operated continuously since 1917

president and general manager of the company. It has proved most satisfactory to operators and patrons alike. Its low energy consumption, averaging 0.8 kw. per car-mile, has effected a great saving. Its high rate of speed, 40 m.p.h., is especially appreciated by the patrons.

The car is a 41-passenger combination unit with smoking compartment. It was built by the Cincinnati Car Company, is all-steel, weighs 21,000 lb., and is equipped with Westinghouse No. 506 motors mounted on 26-in. steel wheels.

London Underground Uses Ticket-Issuing Machines

In spite of its zone fares the London Underground has been successful in employing automatic machinery in its fare collection

MECHANISM which is largely automatic is used in a system of fare collection which has been developed on the London Underground System, although zone fares are charged. Originally, on this system, tickets were sold at ticket windows, as on steam railroads. They were printed with the names of the initial and final station and were surrendered by passengers as they left the destination station. This acted as a safeguard against overriding.

The next step, introduced some twenty years ago, was the installation of slot machines for the sale of tickets. Not all tickets were sold by machine, only the denominations most commonly used, as 2-penny and 2½-penny tickets. The others were sold from a window (or booking office as it is called in London). The machines relieved the ticket agents, however, of considerable work and also helped the public by shortening the time of waiting to buy a ticket. Lettering on the machine showed clearly the amount of money which had to be deposited to secure a ticket and the station or stations to which such a ticket would entitle a passenger to ride. Such a slot machine is shown in an accompanying illustration.

These machines, while useful, were of rather primitive design and noisy in operation. In their original form they also were open to fraud by the use of slugs. They served the purpose, however, and many of them, although greatly improved, are still in use. They still require the exact amount of money to be inserted. They do not make change.

The latest type of slot machine in use on the London Underground System will take either the exact fare or will make change if the traveler inserts a 6-penny coin or a shilling coin. It also weighs the coin inserted and tests it electrically for conductivity to determine whether it is spurious, or not. It then prints, dates and issues a ticket instead of taking one from a supply. All this is done at the rate of a ticket a second. There is only one money slot, no matter what the coin or coins that are dropped into it.

It is believed that this type of machine, when generally installed, will greatly increase the use of slot ticket machines, as experience has shown that 90 per cent of all the passengers at the Underground ticket offices are in possession of either copper penny pieces for the fare, or sixpences, or one shilling pieces.

The type of slot machine just mentioned is not the only one being tested out by the London Underground. Three other forms are also in use. One, shown in Fig. 4, is purely mechanical and has the advantage that it occupies less space than that shown in Fig. 3, though it does not make change. Another advantage possessed by a purely mechanical machine is that it can easily be moved from one station to another. Hence, it is especially convenient for use at outlying stations on days when they are to be used by a large number of people, as for a Rugby game or other athletic event.

Fig. 5 shows how five of these machines designed for different rates of fare have been brought together at one station to occupy a circular space only 3 ft. in diam-

eter. Fig. 6 shows another form of this machine. It is designed to be tall so as to take up very little floor space. It is especially useful in passageways where the room is limited.

Besides these ticket-issuing machines, the company is testing out turnstiles, or passimeters, on rather an extensive scale. These machines have to differ from those used in the United States, because in addition to registering the fare they have to issue a ticket showing the destination to which the fare is paid.

One of the latest turnstile designs is illustrated in Fig. 7. If the passenger drops two pennies in the slot of the 2-penny passimeter, he will receive his ticket printed and dated. At the same time the turnstile is automatically released, thus providing admission to the train platform. If a 6-penny or a shilling coin should be dropped in the slot the same procedure is followed except that the passenger also receives his proper change.

Still another form of passimeter station is shown in Fig. 8. Here, as the passengers pass through the station, pay for and receive their tickets, they are registered on meters in the ticket office. With this system, as well as with the passimeter illustrated in Fig. 7, the inspection of tickets, which has to be done with all the other plans, is dispensed with except for holders of season tickets and return tickets. These represent only about 20 per cent of the traffic.

The latest office ticket issuing machine in use on the

London Underground is shown in the final engraving. Fig. 9. This machine, which is also used with a passimeter, prints, dates and numbers the ticket from plain rolls of paper, and has a capacity of four tickets per second. It is primarily intended for the issue of tickets of the less common denominations, i.e., tickets which have to be issued from an office.

The clerical staff much prefers this machine to the former plan where tickets had to be taken out of the case one at a time. In fact, the work is so much easier that it has been found practicable on the deep underground lines to locate the electrical switches which control the elevators to the station platforms in the ticket office.



Old and new ticket-selling and fare collection methods on the London Underground railway system

- 1. The earliest method used in London, where tickets were sold at a window and punched at a barrier.
- 2. First ticket-issuing machine.
- 3. This machine issues 2-penny tickets and gives change for larger coins.
- 4. This double machine issues 1-penny or 2-penny tickets and is mechanically operated. It does not make change.
- 5. Several automatic machines grouped in the form of a kiosk.
- 6. A high design with small floor area for narrow passageways.
- 7. The passimeter and change-making machine which dispenses with both ticket seller and ticket puncher at entering stations.
- 8. Through type of passimeter station.
- 9. Ticket printing and issuing machine for office issue, used in conjunction with passimeter.

Pontiac, Mich., Improves Its Principal Street

Extensive program involves widening and repaving of Saginaw Street and the relocation and rebuilding of 1½ miles of double track



Street car service was uninterrupted during the construction. One track was poured at a time and operation continued on the other track

INCREASING traffic needs caused the city of Pontiac, Mich., to adopt an extensive program of street widening and opening, the major part of which was the widening and rebuilding of Saginaw Street, the principal business thoroughfare and a continuation of Woodward Avenue of Detroit. The improvement, described in an article in *Engineering News-Record*, involved not only the repaving and the complete rebuilding of 1½ miles of main thoroughfare, but also the removal, relocation, rebuilding and repaving of more than 1½ miles of double-track street railway.

In the rebuilding of the street the Detroit United Railway, which operates both the local transportation system and the interurban service to the city of Detroit, completely rebuilt its double-track line. The condition of the rails and ties did not warrant their use in the type of new construction demanded by the city. On about 2,000 ft. of street in the business section there existed three tracks, all of which were in poor condition. The plans for rebuilding eliminated one track and called for a new double track in the center of the street. This rebuilding

of the street railway system is the more interesting since the franchise for the Saginaw Street line expired on May 17, 1927, and on May 24 a day-to-day agreement was entered into, whereby the street railway company agreed to a number of things, chief of which was the rebuilding of its tracks under city specifications, supervision and inspection.

PLANS PREPARED IN CITY ENGINEER'S OFFICE

All plans and specifications for the new construction, with the exception of special-work layouts, were prepared under the direction of the city engineer and approved by the street railway, of which J. M. Mudie is chief engineer. G. J. Wagner & Company, consulting engineers, of Grand Rapids, Mich., retained as consultants on transportation matters, acted in an advisory capacity on plans and specifications and helped supervise construction of the tracks.

The trackwork consists of 6-in. 100-lb., A.R.A.(A) rails, with thermit-welded joints. The ties are sawed white oak, 6x8 in., 6 ft. 8 in. long, 2 ft. c. to c. and cased



Safety zones and platforms were installed at all important street railway stops in the business district

in a monolithic mass of concrete extending from 8 in. below the ties to 1 in. above them. The paving consists of 4-in. wire-cut paving brick laid on a 1-in. sand cushion and having the joints poured with asphalt filler. Rail filler was used with all regular T-rail sections, together with a special brick nose-block. The concrete was designed for a minimum strength of 2,500 lb. per sq.in. at the end of fourteen days. Actually the test cylinders averaged 2,788 lb. at that time. A carefully proportioned aggregate was used, consisting of a 1 : 3 : 4½ mix, with the mixing time not less than two minutes. The concrete was placed as dry as possible consistent with workability.

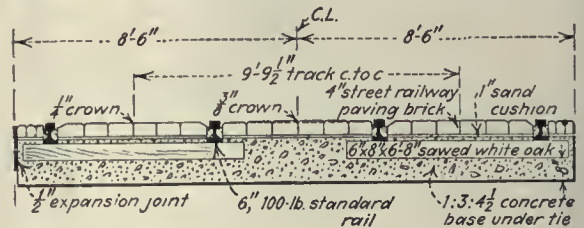
In construction, one track was poured at a time and car service was given over the other until the concrete had attained the desired strength. This required not more than fourteen days, as shown by compression test cylinders. In a few instances, where it was impossible to discontinue service, each tie was well blocked and concrete of a richer mix and longer mixing time poured to within 1 in. of the bottom of the ties. When this had attained sufficient strength the track was relined and reblocked with shims resting on the concrete and the remainder of the concrete was poured. Where this method

was used, the base concrete attained a strength of 2,500 lb. after four days and showed no sign of disturbance from the uninterrupted service.

For the 120-ft. right-of-way an 80-ft. pavement was designed, with a 20-ft. sidewalk on each side. This provides for the double-track street car line, four 10-ft. lanes for moving traffic and two 10-ft. lanes for parallel parking. The wide parking space was provided for two reasons: If parking is prohibited during rush hours, the street will accommodate eight lanes of moving traffic; and the wide parking space will allow greater ease and safety in parking, with less inconvenience to moving traffic.

PAVEMENT CONSTRUCTED TO WITHSTAND HEAVY TRAFFIC

The pavement base, of 1 : 3 : 4½ concrete, is 11 in. thick, reinforced by ⅝-in. rods spaced 2 ft. c. to c. longitudinally and ½-in. rods 3 ft. c. to c. laid crosswise. Adjoining the street railway section, the base is thickened to 14 in., which decreases to the regular thickness in a distance of 3 ft. from that section. A 3-in. straight paving



The ties are cased in a monolithic mass of concrete. Four-inch paving bricks are laid on a 1-in. sand cushion

guard doweled to the base forms a division between the asphalt surface and the street railway brick paving. That paving is completely separated from the street pavement by a ½-in. expansion joint extending from the surface to the subgrade.

During the rebuilding of the street the interests of the merchants and business men were held of paramount importance. All underground work was carried on without closing the street, and the work was confined to limited areas until finished. All back-filling from excavations was mechanically tamped in thin layers. In some instances additional dirt had to be supplied to fill the trench completely, showing that a compaction had been secured greater than that of the original soil. By keeping the various activities spread apart no portion of the street was closed for any great length of time, although it was necessary to barricade the same area more than once. The various operations, involving excavation, curb and gutter, concrete base and asphalt surface, followed in quick succession.

Traffic is so heavy and constant that safety zones with platforms were installed at all



The Saginaw Street improvement included the complete reconstruction of 1½ miles of double track

important street railway stops in the downtown district. These zones, one of which is illustrated, are of the raised concrete type, having a protective curb and iron railing with a splash apron and caution light at the end of each zone. All important street crossings are protected by stop lights, the timing of which is progressive. In addition to the lights, the crossings have galvanized metal markers, and it is hoped that these, in conjunction with the lights, will discourage jay-walking and minimize traffic accidents.

An interesting feature of this $1\frac{1}{2}$ miles of street rebuilding is that the only poles will be combined light and trolley-span support poles 120 ft. apart. These poles are of fluted steel with old-bronze lacquered finish and are 23 ft. high. Each pole carries an ornamental cross-bracket supporting two 600-cp. lamps. Before adopting this pole exhaustive tests were made at the manufacturing plant, which showed that it corresponded in deflection to a 6-7-8 in. tubular steel pole weighing 887 lb., except that the safe load on the fluted pole was 3,500 lb., as against 1,544 lb. for the tubular pole. Under a load of 2,000 lb. the deflection was only $5\frac{1}{4}$ in.; at 4,000 lb. it was $11\frac{1}{8}$ in. and upon removal of the load the pole returned to within $\frac{3}{8}$ in. of its original position. The vibration tests also were satisfactory.

Des Moines Reduces Fire Insurance Cost 44.4 Per Cent

By O. H. BERND

Secretary the Des Moines City Railway, Des Moines, Iowa, and Member Insurance Committee American Electric Railway Association

SINCE Nov. 13, 1923, the Des Moines City Railway has reduced its insurance costs \$6,315 per year, or 44.39 per cent. In other words, the average rate has been reduced from 47.3 cents per \$100 to 26.3 cents per \$100 of insurance.

Early in January, 1924, the insurance was placed on a three-year term, at $2\frac{1}{2}$ times the annual premium, effecting a saving of approximately \$2,300 per year.

The company then directed its efforts to the matter of housekeeping. All of the recommendations made by the local insurance rating bureau, in co-operation with its affiliated organizations, which did not involve any considerable expenditures, were carried out. All wooden lockers for workmen were replaced by approved steel lockers equipped with slanting tops to prevent the storage of any articles on top. Old waste cans were replaced with new approved types and properly distributed throughout the shops and carhouses. Additional fire extinguishers and sand pails were placed in accord with bureau recommendations. All dead or abandoned electric wiring was removed from the various carhouses. In addition to these physical improvements, the program included a general campaign among workmen to induce them to keep their work places clean and free from accumulations of rags and rubbish, resulting in a marked improvement in the performance of their work.

The company has recently completed the installation of automatic sprinkler systems in its car shops and one of its two carhouses. The second carhouse is a temporary frame building, and does not warrant the expenditure necessary to equip it with a sprinkler system.

These automatic sprinkler systems were installed at an approximate cost of \$16,900. As an offset to this ex-

penditure, there was received by the company in return premiums, on account of the reduction in rates, the sum of \$8,484, so that the actual cash outlay for these sprinklers was less than \$8,500.

The total annual insurance saving effected by them is \$3,636. The largest saving is in the car shop. This is a one and two-story brick and concrete building with composition roof, erected in 1904 and partially rebuilt following a fire in 1912. Before the installation of sprinklers the average rate for this building and contents, except rolling stock, was \$1.291 per \$100, while the present rate is 22.4 cents per \$100 of insurance, effecting an annual saving of approximately \$2,668.

The carhouse, which was equipped with automatic sprinklers, is of brick with composition roof, and has a storage capacity of 45 passenger cars. While the average rate on this building and contents, except rolling stock, was reduced on account of the sprinkler installation from 76.4 cents to 28.3 cents per \$100 of insurance, the annual saving effected is but \$230, as only \$48,000 insurance is carried on the building and contents, except rolling stock.

The sprinkler installation in the car shops and carhouse resulted in an insurance saving on the company's rolling stock of \$747, or approximately 10 per cent—a substantial saving, when it is considered that the combined storage capacity of both car shops and carhouse is but 53 passenger cars, or less than one-third of the company's rolling stock.

In addition to the direct savings on insurance premiums we consider the sprinklers a good investment because of the protection they afford, as a serious fire in a carhouse or shops might easily result in crippling the service and prove more costly than the sprinkler installation.

School for Arc Welders

FOR MANY years a school of welding has been conducted in the shop of the Lincoln Electric Company, Cleveland, Ohio, but just recently it has been reorganized and re-equipped. No tuition or fees are charged. The equipment includes a number of standard 200 amp. Stable-Arc welders installed in line with a series of booths in which the pupils work. All wiring except the necessary leads to the electrode holders are in conduit and the floor space is kept clear. The individual compartments are curtained by heavy material.

A 30-day course is given in twelve lessons which include the following: (1) The contact of the arc, its characteristics and manipulation; (2) the nature of welding rods and depositing materials; (3) the operation and care of the welding machine; (4) the nature of vertical and overhead welding; (5) testing welds for porosity and strength; (6) welds on cast iron and their percentage of strength; (7) the advantages and future of carbon arc welding; (8) welding of copper and bronze castings; (9) the use and abuse of pressure welding; (10) the assistance to the human element in Stable-Arc welding rods; (11) the construction of welded machine tools; (12) the simplicity and strength of welded fixtures.

Pupils work under the direction of a trained inspector who teaches them both as a class and as individuals. With 30 days intensive training men are able to acquire a sound working knowledge of the fundamentals of electric arc welding, and are fitted to engage competently in the trade.

Pacific Electric Has Balanced Educational Program

Los Angeles Board of Education furnishes paid instructors for the classes. More than 2,000 men and women enrolled in four years

THAT a well planned educational program for employees of public utility corporations can be carried on with advantage both to workers and the management is demonstrated by the experience of the Pacific Electric Railway of Los Angeles, Cal. The success that has been achieved by this large interurban railway system is evidenced by the present enrollment of more than 600 em-



An interested group of Pacific Electric employees in one of the class rooms at the company's headquarters in Los Angeles

ployees, and by the total enrollment of more than 2,000 men and women in the four years since the plan was inaugurated.

One of the discouraging elements for public utilities conducting educational work on a large scale is the prohibitive cost often involved. The Pacific Electric, however, has reduced the cost so that it is negligible compared to the results achieved, by co-operation with the city's educational board. When inaugurated four years ago under the direction of Earl W. Hill, appointed educational director, the only class was one of traffic management. Interest grew and results from this first effort were so satisfactory that broadening of the program and problems incident thereto were discussed with the Los Angeles Board of Education. The school authorities were deeply impressed with the interest created, and promised aid to the movement by furnishing paid inspectors in any class when attendance of fifteen students could be maintained. Thus encouraged, the educational director began broadening the program.

Two rooms located in the Pacific Electric Building were set aside for exclusive use as class rooms. Desks, blackboards, typewriters, books and other equipment were supplied by the company. Interest of employees was stimulated through the columns of the company's monthly magazine and by encouragement from depart-

mental heads. The work done in this regard, however, was more of an advertising nature, it soon being learned that, given a bit of encouragement, there is an inherent desire in the average individual to broaden his knowledge. With the program well established, there has been no lack of interest on the part of employees; on the contrary, over-enrollment has become the problem frequently.

At present seven studies are being taught, six of which are presided over by teachers supplied by the Board of Education. The subjects are traffic management, personal leadership, public speaking, mathematics, business English, shorthand and typewriting. The classes are held in the afternoon from 4:45 to 5:45 and in the evening from 7 to 9.

Incentive to complete the courses is stimulated by issuing diplomas to those who attend regularly and successfully complete their studies. Furthermore, each employee is advised that his respective department head will be notified of the awarding of a diploma, and will be told of the employee's desire to improve.

Inasmuch as the Pacific Electric operates in four counties and its employees reside in widely scattered districts, the educational director has another duty to perform. He keeps in close touch with and knows the various studies available at all the institutions of learning within the district. Employees are urged to consult with him and he in turn recommends the school where their needs may be cared for best. Approximately 500 employees are placed in schools over the system through contact with Mr. Hill. Reports are furnished to the educational director from the school superintendent, the procedure lending encouragement to the students.

The interest manifested by the employees is exemplified in a recent class in personal leadership which had an attendance record of 98.5 per cent, and for which applications exceeded the capacity of the school room by 50 per cent when the class was reorganized.

Port Arthur Grants New Franchise

SEVERAL interesting provisions are contained in the franchise granted Jan. 11, 1928, by the city of Port Arthur, Tex., to the Eastern Texas Electric Company. The life of the franchise is 50 years. The clause on fares provides that the single fare is to be 10 cents. Tokens are to be sold at three for 25 cents, and weekly tickets for 40 cents, with an additional payment of 5 cents per ride. The franchise declares that in the future, the city may "fix and regulate a fair price for the service to be performed under this franchise." On the other hand, the railway has the right to abandon any line or lines which do not give fair returns on their valuation, or it may abandon a line on any street about to be repaved, if it desires to do so. If any change is made in the grade of any street the city must bear the cost of making the railway tracks conform to the new grade. The company pays \$25 a year annually to the city as reasonable compensation for this franchise.

Maintenance Methods *and* Devices

Adjustable Armature Winding Stand

SOMETIMES it is advantageous to have adjustable, movable armature winding stands in a shop. In the armature shop of the Binghamton Railway, Binghamton, N. Y., armatures of various sizes are in service which require different pedestal centers for mounting on the winding stand and shop conditions require



Convenient type of adjustable armature stand

frequent movement of the armatures to make room for other work. The stand shown in the accompanying illustration was designed to meet this condition. The A pedestals of this stand, which are 32 in. high over all and 22 in. wide, are made of 2½-in. x 4-in. oak, reinforced and bolted together, and equipped with 3-in. x 1½-in iron swiveled wheels. One end of a 1-in. x 4-in. plank is bolted to either side of the inside of each leg of the stationary pedestal and the other end enters a guide on the movable pedestal formed by bolting two 1-in. x 2-in. oak blocks on the inside of either leg of the movable pedestal. This permits one pedestal to be moved toward or away from the stationary pedestal to accommodate the various

sizes of armatures. A safety latch is also provided to prevent the movable pedestal from passing beyond its maximum safe limit.

Life of Journal Boxes Increased by Chilling

WEAR on journal boxes comes principally where the truck pedestals make contact. The pedestal gibs can be replaced easily when they wear, and they are not expensive. The wear on the journal boxes, however, cannot be taken care of so easily, and frequently this becomes so excessive as to cause a large amount of lost motion in the trucks. Finally the box is worn through to the oil chamber in the bottom, particularly where cars operate on streets paved with chert or slag.

To overcome this trouble the Birmingham Electric Company, Birmingham, Ala., uses journal boxes chilled with a cast-iron chill in the mold. Some of these have been in service five years and show little wear, while soft gray iron boxes do not last more than three or four years. The use of chills for the journal boxes at the point where the pedestal comes in contact was found so successful that it was decided to carry the chilling still farther. Now the boxes are chilled where the cover fits on and also at the back where the box goes over the axle. This not only gives a much better casting but eliminates all machine work.

Referring to the accompanying illustration the part marked 1 shows the journal box with the chill surfaces painted white. Parts 2 and 3 are the chills used in the pedestal ways. Part 4 is the chill used where the cover fits and part 5 is the chill used for the back of the box where it goes over the axle.



1. Journal box with chilled surface painted white.
2 and 3. Chills used in pedestals.

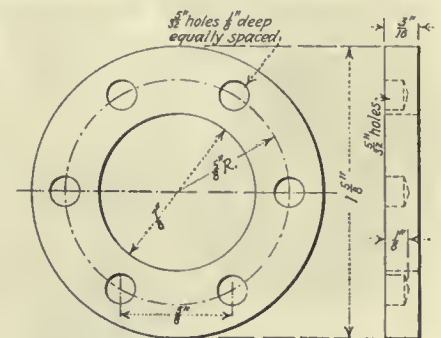
4. Chill used where cover is applied.
5. Chill for back of box where it goes over axle.

A careful check of these journal boxes made with chilling shows that they are just as accurate to dimensions as if they had been machined and the life is increased considerably while the cost of machine work is eliminated.

Sticking M-28 Brake Valves Cured

BY G. E. GRAUBNER
Foreman Cincinnati Street Railway,
Cincinnati, Ohio

CONSIDERABLE trouble has been experienced on the Cincinnati Street Railway with M-28 brake valves becoming stiff. The cause was that the leather key washer gripped

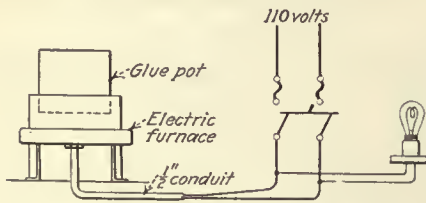


Details of key washer made from babbitt metal and turned to exact size in lathe

the brass seat in the valve casting after a few applications of air. After trying various kinds of oils, greases and compounds without much success, we hit upon the idea of making these key washers out of babbitt metal and turning to size in a lathe. These washers are made the same diameter as the leather washers but they are 3/16 in. thick instead of 5/32 in. Six 3/8-in. holes were then drilled 1/8 in. deep, spaced equally around the face. These holes were filled with graphite plugs, made by melting a good grade of No. 3 cup grease and stirring in as much finely ground graphite as it would hold. The valves receive their regular greasing at each "B" inspection, at intervals of 900 car-miles, at which time they are taken apart and greased thoroughly with a good grade of No. 3 cup grease. Some of these washers have been kept in use for more than four months without showing any signs of stiffness on valves that previously had given much trouble.

Safety Lights Warn and Save

SAFETY is of prime importance in the shop of the Binghamton Railway, Binghamton, N. Y. Here all machines are guarded carefully to prevent accidents and the shop organization receives intensive instruction in the advantages of playing safe at all times. An indicating or warning light is installed wherever electricity is used for heating solder, glue, etc., or where there is a possibility of damage being done if the men for-

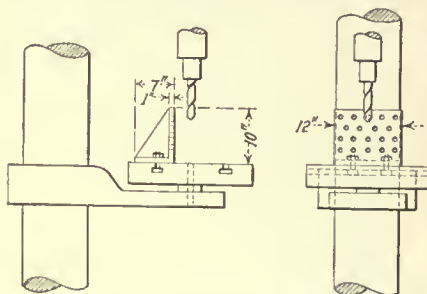


Connections for safety lamp at glue pot

get to turn off the current. The lamp burns continuously while the current is on the machine. The accompanying sketch shows how a lamp is connected across the terminals of an electrically heated glue pot inside the switch so that when the switch is opened the light is extinguished. It acts as a warning to the men that the current is on and can be observed readily from nearly any angle of the shop. At the close of the day it is easy to see at a glance whether or not all of the circuits have been disconnected.

Lever Support and Safety Stop for Drill Press

SPEED of production is considered of prime importance in the Woodside shops of the New York & Queens County Railway, Long Island City, N. Y. A large amount of drilling of small pieces is often necessary. For-



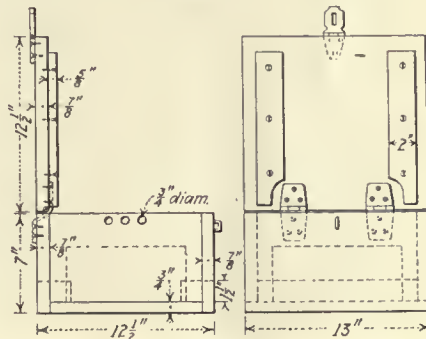
Drill press lever support and safety stop

merly it was the practice to align and clamp each piece to the drill press table. This clamping and unclamping took considerable time and resulted in low production. A casting

was made up to eliminate this work. It was designed to be bolted to the drill press table. The face is drilled with numerous $\frac{5}{8}$ -in. holes, which are used to anchor one end of a lever held by the operator to hold the work in position without clamping. This bracket also acts as a safety stop if control of the piece being drilled is lost. A noticeable saving has been effected by this simple casting.

Protecting Fare Registers from Injury

FARE registers on the New York & Harlem Railroad, New York City, are changed on a definite time basis and repairs and tests are made at the shop. Most of them are changed at the inspection houses which are located at some distance from the shop. They are transported to and from the shop in a supply car. The car transports all kinds of mate-



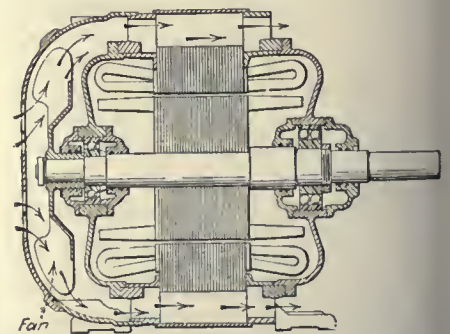
Protective casing for transporting fare registers

rial at the same time and it is found necessary to protect the registers against mechanical injury. This is being done by placing each one in a specially designed box. The box is made of $\frac{3}{4}$ -in. and $\frac{7}{8}$ -in. oak and is $12\frac{1}{2}$ in. wide, 13 in. long and 7 in. deep. It is designed with a substantial, hinged cover and provided with a hasp and staple to permit locking. Movement of the registers within the box is prevented by suitable blocks properly spaced and fastened to the bottom of the box. Three $\frac{3}{4}$ -in. holes bored near the top of each side board provide a means for lifting.

New Equipment Available

Air-Jacketed Motors for Dusty Locations

PRESENCE of dust, fumes and moisture in excessive quantities makes the use of standard electric motors undesirable. For such places an air-jacketed motor has been developed by the Wagner Electric Corporation, St. Louis, Mo. The entire motor is surrounded by a jacket open at both ends. Fan blades on the shaft extension between the sealed motor and its outer jacket draw air around



Cross-section of motor showing ventilating arrangement

the motor. The interior of the motor is virtually sealed, even the bearing housings being closed so that no impurities can get past the grease packing.

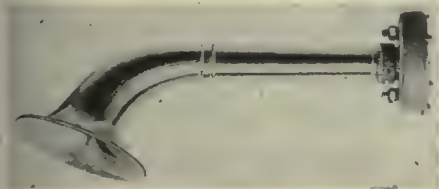
No changes have been made in the electrical principles of the motors themselves, the only changes being external. The frame housing, the motor proper and all bearings are substantially air-tight. The end shield is made of cast iron. It is rib-reinforced and has a substantial grating which protects the fan and provides an opening for incoming ventilating

air. The center shield is made of heavy sheet steel held in place by slot-head bolts. The fan is built in one piece. The conduit box is mountable in four positions.

The ball bearings are grease lubricated and sealed in dust-proof housings. The shafts are made slightly longer than those for standard motors to permit mounting of the fan.

Harmonious Tone to New Horns

"PNEUMOPHONIC HORN" is the trade name of a warning signal device being marketed by the Westinghouse Air Brake Company, Wilmerding, Pa. It has a clear, harmonious tone which is distin-



Warning horn

guished easily from other right-of-way noises. It uses little air and, as it requires no special reducing valve, operates successfully over a wide range of pressures and is of sturdy and durable design. The diaphragm or vibrating unit inclosed in a cast base is a substantial phosphor bronze disk uniquely balanced by a small weight. The bell of the horn is highly burnished, heavy-gage instrument brass.

This horn is available in various types and sizes to obtain different tonal qualities and in combinations for producing a pleasing chime effect.

Portable Lighting Unit

MANY advantages are claimed for a powerful portable acetylene flare lamp which has been added to the line of the Oxweld Acetylene Company, New York, N. Y. It is intended for night construction work and subway or tunnel building.

The fuel used is produced from Carbic, supplied in the form of cylindrical cakes of uniform size. Enough to operate the flare continuously for twelve hours can be placed in the lamp at one charging. If the use of the lamp is discontinued before the entire charge is used, the portion remaining can be left in the holder, or, being dry, solid and clean, can be

slipped back into the drum for use later.

This flare is planned to operate in all climates and in all weathers. It has a storm-proof burner, permitting its use even in the most violent gales. Construction is rugged and simple. There are but three parts, and these cannot be assembled incorrectly. Charging requires only a few minutes' time of one man. When put in operation the lamp needs no further attention until the charge is exhausted.

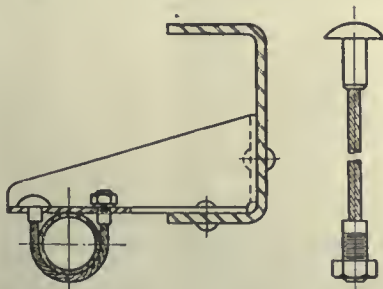
An automatic feed allows water to come in contact with the lowest cake of Carbic until sufficient acetylene is generated to drive the water out of the gas bell to a level below the bottom of the cake. This process is repeated as needed and gas is maintained at a pressure less than 1 lb. per sq.in. The Carbic never rests on a pad of sludge since the residue settles to the bottom of the water. If the lamp is upset accidentally, the water runs out of the container and gas generation stops immediately.

The Carbic light is available in several styles, which range in size from a hand lamp to the 8,000 cp. "Standard" model, which weighs 36 lb. empty and 115 lb. charged and stands 6 ft. 7 in. high with reflector raised. A double burner model, which illuminates in two directions, is furnished in about the same size as the "Standard" model.

Flexible Bolt Developed

DEVELOPMENT of the pre-formed type of rope makes possible attachment of fittings so that they become an integral part of the rope. For this purpose the American Cable Company, Chicago, Ill., has brought out a flexible bolt, which can be used to advantage for fastening piping, conduits or other equipment on cars where ordinarily a rigid U-bolt might be used.

Pre-forming the wires and strands of the rope to the exact helical shape



Method of attaching conduit by means of the flexible bolt

that they must assume in the completed rope results in a cable that does not require seizing and may be cut like a rod. This type of rope permits a close-fitting attachment to be slipped over the unseized end of the rope and to be processed so that the steel of the fitting cold flows into the interstices of the rope and thus becomes practically an integral part thereof. Such fittings can be capped for a head and threaded for a nut.

Touch-Up Spray Gun

FOR USE in painting where a fine spray is required the Alexander Milburn Company, Baltimore, Md., has recently developed a new touch-up gun. The extremely fine mist, or spray, procured with this gun is desirable for blending of colors on any surface, touching up scratches, mars or dents, stenciling and numerous



Touch-up spray painting gun

other fine painting operations, using lacquer, varnish or other finishes.

The new gun is quick in operation, is well balanced, has a stable base and is handled easily. Slight pressure on the trigger produces a very fine mist, so completely atomized that the color is blended with the surrounding painted surface. The gun can be adjusted to procure a hair-line spray for the finest kind of work. It is designated as K-Jr.

Six feet of air hose, with connections, are furnished with the gun. Various containers, either aluminum or glass, can be furnished so that many different colors can be kept on hand ready for use. Each container can be had with an air-tight cap so that paint can be kept in condition while in the cup. Aluminum cups are 8 oz. size; glass containers, 8, 16, and 32 oz. sizes.

American Association News

Executive Committee Meets

REPORTS of the several standing committees of the American Electric Railway Association, made to the executive committee at its regular meeting at association headquarters on March 30, indicate progress in the formulation of plans for the 47th annual convention in Cleveland next fall. A tentative outline of the convention program submitted by Chairman Frank R. Coates and a report by J. H. Alexander, chairman of the exhibit committee, were received and approved. The executive committee also discussed developments in national legislation of interest to electric railways and reviewed the status of association membership and finances.

Those present at the meeting included the following: R. P. Stevens, L. S. Storrs, J. R. Fitzpatrick, H. E. Weyman, Adam Meyer, G. C. Hecker, J. S. Kubu, S. J. Cotsworth, R. I. Todd, E. F. Wickwire, D. W. Snyder, Jr., W. H. Sawyer, Edward Dana, Labert St. Clair, F. C. J. Dell, John A. Miller, Jr., E. J. Murphy, Leslie Vickers, F. R. Coates, T. W. Casey, C. E. Morgan, G. A. Richardson, Charles Gordon, E. P. Waller, M. B. Lambert, T. A. Kenney, C. R. Ellicott and J. W. Welsh. At the suggestion of C. E. Groesbeck, A. S. Grenier of the Electric Bond & Share Company was elected a member of the executive committee to fill the unexpired term of Mr. Groesbeck.

Report of the finance committee by Chairman T. A. Kenney indicates that dues received from member companies are within the budget estimates and that the process of absorbing directly in the dues of the association the expenses formerly covered by special assessments is proceeding satisfactorily in accordance with the plan in view when the constitution was changed last fall.

Work of the committee on publicity was outlined by J. W. Welsh in the absence of Chairman Paul Shoup. Mr. Welsh said that the advertising section of the association has aided several railways in the preparation of local advertising campaigns. Posters and booklets have been distributed to operating companies as aids in the merchandising of transportation. The moving picture films entitled "Wheels," "Readiness to Serve," "Mr. Auto Rider Becomes Mr. Car Rider," and "Fashion Show of Local Transportation" have been shown in a total of 508 places during a period of four months.

CONVENTION PLANS DISCUSSED

The general subject of "Economics of Transportation" is contemplated for the first day's program of the Cleveland convention, according to the report of Frank R. Coates, chairman of the program

committee. The second day will be devoted to the subject of modernization, the third day to outside viewpoints of the transportation industry. It is planned to devote Thursday's program to a discussion of the national aspects of the association's activities. Wide-spread interest in the luncheon meetings last year indicated the desirability of continuing this plan for the coming convention. Subjects contemplated for these luncheon meetings include rates of fare, interurbans, traffic, financing, taxation, management, employee relations, advertising, bus operation, and car design. It was suggested during the meeting that a luncheon session be devoted to the discussion of manufacturing problems in the industry. Another suggestion was that the time for serving luncheons be cut down this year so as to make more time available for the discussion of the several subjects. The general plan of the program committee was approved by the executive committee.

L. S. Storrs, managing director, who has returned to his duties after a period of illness and a trip to the Pacific Coast, reported for the committee on national relations in the absence of Chairman J. H. Hanna. Mr. Storrs outlined content of bills pending in Congress which affect electric railways. These include a bill defining the difference between commercial electric railways and street and interurban railways, which would take the latter out from under the jurisdiction of the Interstate Commerce Commission. This bill, introduced by Representative Johnson, is H. R. No. 12108. A bill to regulate interstate buses, introduced by Congressman Parker and known as H. R. No. 12380, seems to be receiving the approval of all parties interested in the interstate bus situation, according to Mr. Storrs, and shows promise of being passed at this session of Congress. The managing director supplemented his report for the committee on national relations by briefly reviewing his trip to the Pacific Coast and the situation of some of the far western transportation companies. In answer to a question by C. R. Ellicott, Mr. Storrs said that the new policy with respect to the publication of *Aera* seems to be working out satisfactorily and that the association's magazine in its new form is meeting the approval of the industry. President Stevens called attention to the diversity of articles in the April issue and to the manner in which *Aera* is interpreting the activities of the association and giving emphasis to the human element in transportation operation.

D. W. Snyder, Jr., read a letter addressed by the Illinois utilities asso-

ciations to the National Electric Light Association calling attention to the misleading information that is being circulated regarding the operation of the Springfield, Ill., municipal lighting plant.

Report of the committee on co-operation with manufacturers was made by Chairman E. F. Wickwire, and President Stevens for the Charles A. Coffin committee reported that there are indications that approximately ten entries will be made in this year's Coffin contest.

MORE SPACE FOR EXHIBITS THIS YEAR AT CLEVELAND

A letter from Chairman J. H. Alexander of the exhibit committee was read by Mr. Welsh. The exhibit layout this year provides for a total of 135,000 sq. ft. of space, which is considerably more than that available last year. By agreement between the program, exhibit and entertainment committees, the day set aside for annual inspection of exhibits will be Tuesday of convention week instead of Wednesday as heretofore. It is also planned to open the exhibits at 9 a. m. on Saturday, Sept. 22, and a recommendation was made to the transportation committee that special trains be arranged to arrive in time so that delegates may take advantage of this earlier opening of exhibits. Mr. Welsh announced that bulletins and reservation blanks regarding hotel reservations will go out in a few weeks.

A tentative outline of the entertainment program was presented by President Stevens, who reported that the entertainment committee considers dancing one of the most popular forms of entertainment and is planning to provide more time on the entertainment program than has been available for this feature in recent years.

President Stevens called attention to the coming meeting of the United States Chamber of Commerce and suggested the value of attendance by electric railway men. Requests have been received by the association from the Baltimore Chamber of Commerce and from the Birmingham Chamber of Commerce asking support for E. B. Jeffery, candidate from the Second District and Oscar Wells, candidate from the Fourth District, respectively.

The next meeting was scheduled for Wednesday, May 9, at 3 p. m. in Washington, D. C., during the meeting of the United States Chamber of Commerce.

New Association Members

FIVE companies, four state and sectional associations and ten individuals were elected to membership in the American Electric Railway Association at the meeting of the executive committee held on March 30. A list of

the companies and associations elected to membership follows.

RAILWAY

St. Paul City Railway, Minneapolis, Minn. This membership substituted for the Twin City Rapid Transit Company.

Wilkes-Barre & Hazleton Railway, Hazleton, Pa. This membership substituted for the Wilkes-Barre & Hazleton Railroad.

Boston, Revere Beach & Lynn Railroad, Boston, Mass.

MANUFACTURER

Anderson Brake Adjuster Company, Omaha, Neb.

The Collier Construction Company, Cleveland, Ohio.

STATE AND SECTIONAL ASSOCIATIONS

Central Electric Railway Association, Indianapolis, Ind.

Maryland Utilities Association, Baltimore, Md.

Midwest Electric Railway Association, Kansas City, Mo.

Pennsylvania Street Railway Association, Harrisburg, Pa.

Engineering Proceedings Ready

Proceedings of the Engineering Association covering the committee work and convention for the year 1927 are now being distributed to members. At last year's convention members reports were presented at simultaneous divisional meetings, thereby making available more time for the general sessions. As a result a number of interesting papers on timely engineering topics were presented. These papers and the ensuing discussions are published in full in the Proceedings.

The papers included cover such subjects as track construction and maintenance, economies with modern cars, automatic substations, overhead maintenance, trends in motor coach engineering, and commercial aviation.

The work of the four general divisions of the Association covers many subjects of importance to the industry, together with a discussion of these matters on the convention floor. For the way engineer, such subjects as alloy steels other than manganese for special track work, rail corrugation, arc welding processes, wood preservation, and welded rail joints, will be found especially interesting. Rolling stock men will find in the reports of the Rolling Stock Division reports on motor coach design, car design, car lighting, noise reduction and other equally important subjects. The Power Division reports contain valuable information on automatic sub-stations, mercury arc rectifiers, trolley construction, and other matters of interest to power engineers.

The standardization work of the various divisions is another important phase of the Engineering Association work. Revisions of existing standards and practices, as well as new ones established, will be found throughout the committee reports.

Preferred Numbers Proposed

Preferred numbers have been proposed by the American Engineering Standards Committee. These have been informally approved by that body and are recommended to American industry for trial and criticism. According to a statement from P. G. Agnew, secretary

of the A.E.S.C., preferred numbers have as their purpose the elimination of economic loss involved in the haphazard and often needlessly numerous gradations of size that characterize most of our common commodities.

The fundamental elements of the system lie in the proposal to arrange standard size series so that each succeeding model in a series shall be larger than the preceding size, not by a definite amount, but by a fixed per cent. By decreasing the number of sizes within a certain range while retaining a sufficient number of sizes in all parts of the range a system of preferred numbers makes it possible to effect savings in materials, labor, storage space, gages, containers, catalogs, sales cost, etc. An example of increase by a fixed per cent rather than by a definite amount is found in the Brown & Sharpe wire gage which has been in successful and wide use since 1857.

C. E. Skinner is chairman of the general committee on preferred numbers and H. H. Norris is the representative of the American Electric Railway Association, while L. P. Alford is chairman of the working committee.

Three series have been approved informally, being geometric series that give respectively five, ten, twenty and 40 gradations in passing from one to ten, ten to 100, etc. The attached table gives the four series for the range from one to ten. For the range from 0.1 to 1.0 the numbers are approximately one-tenth as large. The committee states:

So far as possible, the numbers of the five series are to be used in preference to those of the ten series, these again in preference to those of the twenty series and these, finally, to those of the forty series. It is permissible to pass over from one series of preferred numbers to an adjacent series.

TABLE OF PREFERRED NUMBERS
Informally approved by the American Engineering Standards Committee

5 Series	1 to 10		
	10 Series	20 Series	40 Series
1	1	1	1.05
		1.12	1.12
		1.25	1.18
	1.25	1.25	1.25
		1.4	1.32
		1.5	1.4
1.6	1.6	1.6	1.5
		1.8	1.6
	2.0	2.0	1.7
		2.25	1.8
2.5	2.5	2.5	1.9
		2.8	2.0
	3.2	3.2	2.1
		3.6	2.25
4.0	4.0	4.0	2.35
		4.5	2.5
	5.0	5.0	2.65
		5.6	2.8
6.4	6.4	6.4	3.0
		7.2	3.2
	8.0	8.0	3.4
		9.0	3.6
		9.5	3.8
10.0	10.0	10.0	4.0
			4.25
			4.5
			4.75
			5.0
			5.3
			5.6
			6.0
			6.4
			6.8
			7.2
			7.6
			8.0
			8.5
			9.0
			9.5
			10.0

COMING MEETINGS
OF
Electric Railway and Allied Associations

April 25-27—American Society of Civil Engineers, spring meeting, Washington Hotel, Washington, D. C.

April 25-27—American Welding Society, annual meeting, 33 West 39th Street, New York, N. Y.

April 26-28—Missouri Association of Public Utilities, Jefferson City, Mo.

May 2-5—Southwestern Public Service Association, Dallas, Texas.

May 4—Metropolitan Section, A.E.R.A., 33 W. 39th Street, New York, N. Y.

May 6-12—Union Internationale de Tramways, de Chemins de Fer d'Interet Local et de Transports Publics Automobiles, Rome, Italy.

May 8-11—United States Chamber of Commerce, Washington, D. C.

May 9—A.E.R.A. Executive Committee, Washington, D. C., 3 p.m.

May 9-10—Central Electric Railway Master Mechanics' Association, Erie, Pa.

June 4-6—Midwest Electric Railway Association, Hotel Baltimore, Kansas City, Mo.

June 6-8—Canadian Electric Railway Association, annual convention and exhibits, Toronto, Canada.

June 20-27—American Railway Association, Div. 5—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association), annual convention and exhibit, Atlantic City, N. J.

June 21-22—American Railway Association, Motor Transport Division, Atlantic City, N. J.

June 28-29—Central Electric Railway Association, Cedar Point, Ohio.

July 8-12—Public Utilities Advertising Association and International Advertising Exposition, Detroit, Mich.

July 25-27—Electric Railway Association of Equipment Men, Southern Properties, Cincinnati, Ohio.

July 27-28—Central Electric Railway Accountants' Association, Detroit, Mich.

Aug. 16-17—Wisconsin Utilities Ass'n, Transportation Section, Sheboygan, Wis.

SEPT. 22-28, 1928
American Electric Railway Association, 47th annual convention and exhibit, Cleveland, Ohio.

News of the Industry

New Wage Contract Sought By New York State Men

Employees of the New York State Railways in Rochester, Utica and Syracuse have filed a petition with President James F. Hamilton of the company, asking a new wage and labor contract and providing for a straight increase of 8 cents an hour and certain changes in working conditions. The increase would raise crew conductors and motormen from 55 cents to 63 cents; one-man car operators from 60 to 68 cents an hour; interurban operators from 57 to 65 cents an hour.

The union bases its demands for more pay on fare increases granted the company in the three cities. The railways will oppose this plea on the ground of ever-increasing maintenance costs, especially in paving.

Any settlement agreed upon in conferences between railway and union officials must be ratified by joint vote of the workers in the three cities.

President Hamilton is non-committal as to the company's stand on the wage demand, but said he would hear arguments of the union officials April 15 or thereafter. The new contract is effective May 1 and, in case an agreement is not reached by that time, any subsequent pact becomes retroactive.

Wage Negotiations in Prospect for Eastern Massachusetts

Employees of the Eastern Massachusetts Street Railway, Boston, Mass., are preparing negotiations for a wage increase when the present agreement is terminated on May 2.

Under the present agreement the wage scale is 69½ cents per hour. Operators are said to be seeking 82 cents per hour and one new uniform a year. The demands are in line with present concessions and remuneration granted employees of the Boston Elevated Railway. The various unions in cities served by the Eastern Massachusetts Street Railway have voted favorably for a wage increase.

Sunday Passes in Gary

A special Sunday pass, costing 25 cents and entitling the bearer to travel during the entire day anywhere on the interurban or city system, will be adopted April 15 by the Gary Railways, Gary, Ind. The Sunday passes will be good for any number of rides but only on the Sunday on which they are purchased. Passes may be purchased either from car operators or at regular ticket agencies.

The longest interurban line operated

by the company runs from Gary to Valparaiso, a distance of 26 miles. Other intercity lines connect Gary with Hobart, Hammond and East Chicago.

Locust Street Tube in Philadelphia Approved

An ordinance providing for construction and operation of the Locust Street surface-car subway was approved March 30 by the transportation and public utilities committee of the City Council of Philadelphia, Pa., and reported to the Council with a favorable recommendation. Where the new line will be connected with the Delaware River Bridge was not decided. The sum of \$10,000,000 has been appropriated for the abandoned Chestnut Street tube project which the Mayor and the Council will transfer to the Locust Street work upon approval of the voters at a referendum in the forthcoming primary. The entire project will cost about \$40,000,000 and construction will take three years. Under the ordinance the Philadelphia Rapid Transit Company will pay the fixed charges on the money borrowed by the city for the subway construction. After the cost of the project is met out of the rentals, the title to the line will be vested in the city.

Mayor Mackey has stated that he will call a conference on the Broad Street subway operating agreement soon after the primary of April 24. He stated that a conference on this point might have been called three months ago, but he preferred first to obtain engineering and operating facts for use in the negotiations. It was also announced by the Mayor that he had asked Comptroller Hadley to study the McChord finding and to report on the question of condemning the properties of the Philadelphia Rapid Transit underliers.

Council Adopts Belt Ordinance for Oklahoma City

The construction of an electric freight belt line at Oklahoma City, Okla., to cost approximately \$1,250,000, was assured March 27, when the City Council adopted ordinances clearing the way for this project. This line is to be constructed by the Oklahoma Railway to connect its Oklahoma City-El Reno line with the line connecting Norman, Oklahoma City and Guthrie, and intermediate points. The route lies mostly outside the western city limits. The road will be used for hauling freight traffic. Material is being assembled and about 250 men will be employed on the project. This improvement was described in detail in the *ELECTRIC RAILWAY JOURNAL* issue of March 10, 1928.

Contract Ratified in Scranton

Employees of the Scranton Railway, Scranton, Pa., are now working under a new agreement with the company, following the recent vote to ratify the pact which replaces the one that expired April 1. Under the new agreement motormen and conductors were not granted an increase. However, carhouse men under certain classifications were given an increase of 2 cents an hour, and bus drivers 3 cents an hour. Trainmen will profit by a change in working conditions as regards "tripper" or rush-hour lines. Under the new contract trippers will not leave the carhouse before 1:30 p.m. and will not work later than 7:30 p.m. Four hours pay will be the minimum rate for this kind of work.

The new agreement also provides for the issuance of 75 passes per month to motormen, conductors, and bus drivers, which will be good on all rail and bus lines of the company. Workers also approved their subscription of 50 cents monthly to be assigned to the pension fund.

A general increase of 5 cents an hour for all employees had been sought by the men.

Report on Knoxville Awaited

Until the report of Harland Bartholomew & Associates, planning engineers on the transit facilities of the city of Knoxville, Tenn., is received and passed upon by the city planning commission an ordinance conferring franchise rights on the Knoxville Rapid Transit Company to give service on six separate bus routes is being held in the Council's files. The ordinance is subject to passage on final reading, after amendment to conform with the recommendations of the engineers, the planning commission and the act of the Council, when it is determined that the Knoxville Power & Light Company will not give the service sought.

Under its contract with the city to conduct the survey the firm of St. Louis engineers was to submit its findings not later than April 1, the local commission to receive same and pass the survey along to the Council with recommendations. Briefly the report, which will probably now be ready by May 1, is expected to develop the needs of Knoxville in the way of transportation facilities with recommendations for meeting such needs.

The engineering firm is committed, to an extent, to a policy whereby the company now furnishing transportation service shall have the right to meet the additional transit ordered by the Council, and where such an agreement is not harmoniously reached any independent company or companies be granted franchises for furnishing this service.

Maryland Commission Denies Fare Decision Was Confiscatory

The Maryland Public Service Commission has answered the bill of complaint which has been filed by the United Railways & Electric Company, Baltimore, Md., and under which the company seeks to restrain the commission from preventing it from charging a straight 10-cent fare and charging two fares to the Halethorpe section. The commission recently handed down a decision permitting the United to charge 9 cents straight fare with three tokens for 25 cents. Hearings of the suit of the United Railways will open in the Circuit Court of Baltimore on April 30.

The commission declares that the maximum rate of fare the company is permitted to charge was adequate to provide for the necessary expenses and yield a fair return on the value of its property; that the percentage that was found would be the rate of return upon the fair value of the company's property, yielded by fares established by the order of the commission, was a sufficient rate of return to compensate the company for the use of its property in the public service; that the amount that was determined would be a proper annual allowance out of the earnings to provide for depreciation of the company's property was adequate for that purpose, and that the commission lawfully and properly required the company to abolish the second fare upon the Halethorpe line. When the commission handed down its decision it placed the Halethorpe territory on the one-fare zone.

The commission wants the court to dismiss the bill filed by the railway.

Articulation of Reading Lines with P. R. T. Suggested

The Philadelphia Rapid Transit Company, Philadelphia, Pa., proposed on March 30 that the Reading Company sell the two steam lines now in operation to Chestnut Hill, Newtown and Bustleton to the city of Philadelphia so they could be electrified immediately and made to serve as essential feeders to the \$100,000,000 Broad Street subway. Officials of the transit company pointed out that the Reading Company would be able to abandon operations of the Chestnut Hill division and that the city could effect a saving in time and money through the immediate creation of a feeder line which would be considerably more costly to construct.

The Philadelphia Rapid Transit Company's proposal was coupled with an offer to join with the Reading Company in 50-50 operation of buses in territories which both companies plan to serve. The new subsidiary under the P.R.T. plan would hold the certificate of operation between Philadelphia and Easton, Philadelphia and Trenton and on a new line to operate along Old York Road making possible the abandonment of trains by the Reading Company on the New Hope branch.

Through Agnew T. Dice, the Reading Company's attitude toward the Phil-

adelphia Rapid Transit's proposal was defined. He said that the suggestion that the city condemn railroads engaged in interstate commerce raised a grave question of law; that while the company did not object to conferences in the matter with anyone interested, it must be remembered that the plans of the Reading Company for electrification of all of its suburban lines, including those in question, was now nearing completion.

Final Briefs Filed in Interborough Fare Case

Briefs were filed on April 4 by the Interborough Rapid Transit Company, New York, in the case before the statutory court which is considering an application by the company for an interlocutory injunction preventing all parties concerned from interfering with

System in Houston Offered to City

A proposition to sell the railway system of the Houston Electric Company to the city was made by Jeff Alexander, manager of the company, at a hearing before the City Council to consider the removal of the car tracks from one of the principal streets and the substitution of bus service. He is reported to have said:

I should like to ask you to consider seriously the possibility of the city taking over the railway and running it as a city-owned project. It is impossible for any private corporation to continue giving something that costs more to operate than is received for the service.

We've been losing money since 1920. Then our properties were valued at \$6,000,000. Now the valuation has jumped to about \$9,500,000. Our earnings haven't increased in proportion to our capital



Rollin Kirby in the New York World

Star gazing

the collection of a 7-cent fare. With the case closed and all the briefs, affidavits and exhibits, numbering thousands of pages, before the judges, a decision is expected within a week or ten days.

Schedules Revised in Toledo

Schedules on the Cherry Street line of the Community Traction Company, Toledo, have been revamped so that much better railway service may be provided to compete with other means of transportation. The new schedules provide for an average speed of 11 m.p.h., which will cut nearly fifteen minutes time off the round trip formerly in effect. Rush-hour service has also been speeded up, and at the peak there will be a 3½ minute headway.

Another new feature of the service on the line is the proposal to establish bus service on the owl runs.

New stops have been marked with a brilliant orange stripe around near-by poles at the curb, adding to the visibility and conforming to the color of the cars on the line.

investment and we can't go to the stockholders each year and ask them to put more money in the railway on the strength of promises. Out-of-town investors just won't continue to invest their money here in a losing proposition.

The city must buy the company or subsidize it, or the matter will end in the courts, he declared. Mr. Alexander is also reported to have said:

The taxpayers are going to have to pay for the railway service in the end, so why not let the city supervise that expenditure. Let the city buy the system. People are not getting the service they are entitled to, and we can't give it to them. We'll be glad to have the properties appraised by any fair board of appraisers you appoint and take their offer.

Pointers from Cleveland

Personal Pointers, containing information pertaining to employee activities, is to be distributed from time to time by the Cleveland Railway, Cleveland, Ohio. These sheets will also tell about the workers of the safety, welfare and employment divisions of the company.

Status of Massachusetts Bills

All the propositions pending before the Massachusetts Legislature concerning the future of the Boston Elevated Railway are now before the House committee on ways and means. The bill which has the backing of a committee report is house bill 1129, which calls for public ownership, and on which the fight is centering at the present stage.

This bill could create a metropolitan transit commission and invest it with authority to purchase the Boston Elevated under the option contained in the 1918 control act and to operate the system in Boston, Cambridge, Somerville, Medford, Malden, Everett, Revere, Chelsea, Newton, Arlington, Brookline, Watertown and Belmont. Advocates of this measure contend that there is no other bill that has any reasonable expectation of passing the Legislature, and opponents of it are backed by the Boston Chamber of Commerce and by a strong minority committee report in the Legislature.

It may be significant that the House committee on ways and means has authority to consider all the Elevated bills, and can report any one of them as it is or in amended form, or can report a resolve for further study of the situation.

Express Service for Hartford Baseball Fans

The Connecticut Company, Hartford, Conn., is to cater to the baseball fans of the city during the coming summer. In a recent conference between N. J. Scott, manager of the Connecticut Company at Hartford and J. W. Pyne, business manager of the Hartford Baseball Club, it was arranged that the company would operate express trolleys to the ball park. Complete details have not been announced but preliminary plans provide for express cars to run in advance of regular cars, thus cutting the running time a half hour.

Employees of insurance and brokers' offices quit work early enough in the afternoon to witness the Eastern League games played at the Buckeye Stadium, but in the past it has been difficult for them to reach the stadium by trolley in advance of game time due to the many stops.

Sleet Storm in Ohio Damages Utilities

Damage to the extent of more than \$750,000 to various utilities is reported as the result of the sleet storm which swept over northwestern Ohio on March 29. The city of Findlay was without wire communication and electricity for more than a week. The Toledo, Bowling Green & Southern Traction Company was able to restore partial service April 1, but it was said that it would be several days before Findlay is completely lighted again. Many poles were thrown across the tracks of the interur-

ban between Toledo and Findlay, and while service was badly crippled it was stated on April 4 that the road was rapidly emerging. The loss to this company is placed at \$100,000.

The Taxi and Railway in Seattle

Declaring that the present taxicab rates are making deep inroads into the earnings of the Seattle Municipal Railway, Seattle, Wash., Robert MacFarlane, representing a group of unnamed business men, recently filed a request with the City Council for an exclusive franchise for a taxicab-operating \$1,000,000 organization, to be formed by a merger of existing taxicab concerns. Mr. MacFarlane said the group he represented was prepared to post \$25,000 bond if the Council would consider its offer. His plan provides that the taxicab concerns given the franchise would pay the city 2 per cent of its gross earnings, with a minimum of \$25,000 a year. Details of regulation, rate-making and parking would be left to the City Council under the proposed plan. In effect the plan calls for a monopoly for the organization operating the taxicabs. The plan stipulates that if a franchise be given another taxicab company the 2 per cent earnings tax would be forfeited. Mr. MacFarlane said:

Lack of proper regulation and supervision has made a "jitney" out of practically every taxicab today in certain classes of service, it is actually cheaper to ride in a taxicab than on a street car. An actual survey discloses that present taxicab rates are resulting in an increase of approximately \$600,000 a year. This means a correspondingly less volume done by the street cars.

The proposed merger has not met with unanimous approval of the taxicab operators. Organized labor is also expected to take an active hand in the question, since the rate war has directly affected wages of drivers, members of the taxi union declare. Present union agreements with operating companies expire May 1, and new agreements are now in the making. It is stated drivers will insist on a straight zone-rate wage being paid on cabs operating on a zone-rate or part zone-rate basis. City officials have voiced their approval of any "reasonable plan" that would end competition.

The *Seattle Daily Times* says the figures show a steady decrease in railway revenues during the last few years, but fail to show that the recent low-rate taxicab competition has had any marked effect on railway revenues. The *Times* statistician states that during October, November and December, 1927, and January, 1928, a period when the taxicab rate war had gathered full momentum, the total in railway fares collected came to \$1,910,332. He also shows that during similar months of the preceding year the receipts were \$1,955,749, so that there was a decrease of \$45,526. This decrease appears to be a part of a steady decline in railway riding. During the last few years the decrease has been marked.

Reconstruction Order in Omaha Termed Unfair

The Nebraska Supreme Court has sustained the appeal of the Omaha & Southern Interurban Railway, Omaha, Neb., from an order of the State Railway Commission that it reconstruct a highway bridge over its lines at a point in Sarpy County, and ordered the case dismissed without prejudice to another order should conditions warrant one in the future. According to the court the commission is without jurisdiction or power to order a crossing of this kind at the expense of a common carrier to meet a contingency that may never happen, and it may make such an order only when it is clear that the public convenience or necessity requires such construction. This overhead crossing formerly carried a road used before automobiles came into use, but was abandoned by drivers because of its grade. When the bridge collapsed the county board brought suit to require its reconstruction.

The court says that the intent of the Legislature was that safe and adequate means for crossing railroad tracks be provided where they were needed; further, that it would be assumed that the legislators knew that as the cost of such construction eventually was paid by the public, it would not require that to be done at public expense which was not for its convenience and use.

Yesterday, Today and Tomorrow Via the Trolley

The trolley may be troubled, as indicated by Raymond S. Tompkins in the April issue of *American Mercury*, but the conclusion of the author, after a careful study, is that the future of the electric railway industry looks reasonably bright, at any rate to those who take the view that in the big cities nothing else but street cars will do the transportation work efficiently. In the face of many discouraging features Mr. Tompkins, affiliated with the United Railways & Electric Company, Baltimore, and a former newspaper man, sees optimism all along the line in the possibility of restoration of the electric railway as a transportation service to full vigor and efficiency. He traces briefly the history of the electric railway from the day of the horse car to the glamorous installation of electric cars in Baltimore, Cleveland and Richmond. One of the big movements in this industry stressed by the writer is the change in attitude on the part of the railway managements toward the public they serve. With them today public relations is a telling factor in the selling of rides.

Extension Again in Chicago

The franchises of the Chicago Surface Lines have been extended by the City Council for another 30-day period. This is the fourteenth time that the franchise, which expired Jan. 31, 1927, have been extended.

Transportation Progress Noted at Connecticut Exhibit

The Connecticut Company featured the Home Progress Exposition, held at Hartford, Conn., March 24-31, with the exhibition of one of the latest model street cars. This booth attracted much attention and elicited considerable praise. So attendants at the booth might explain the mechanism the body was cut away exposing the motors and brakes. The car formed only part of the company's exhibit.

L. S. Storrs, formerly president of the Connecticut Company, and now managing director of the American Electric Railway Association, presented to Yale University a quaint model car, which the university was kind enough to loan to the company in connection with the exhibit. The model is a replica of the pioneer electric car operated in Derby, Conn., in 1888. This car marked, it is said, the advent of the overhead trolley in Connecticut. The car was 18 ft. long.

At the booth were interesting photographs from days gone by depicting cars, long out of commission, and gangs of bearded working men. There was a picture of the State Street carhouses, Hartford, taken in 1885. There was also a picture of the original trolley car operated in Meriden in July, 1888, and the first car to make its appearance in Hartford on Sept. 12, 1888, on the Wethersfield Avenue line. The photograph of a Hartford horsecar taken 50 years ago came in for much attention and comment.

Columbus Council Postpones Franchise Negotiations

Action on the new franchise for the Columbus Railway, Power & Light Company, Columbus, Ohio, has been postponed by the City Council until May 15.

The chairman of Council's utilities committee presented the company's suggestions to Council after conference with C. G. Slater, president and general manager of the railway. Mr. Slater said that extensions sought would be granted and better service would be provided on all lines if the company were permitted to speed up its cars. He wants the legal limit raised to 25 m.p.h., the "skip stop" system established and all streets with car tracks designated as main thoroughfares as a means for speeding up service.

Unless the concessions are made it will be impossible for the company to grant the extensions requested by Council. Mr. Slater said the company had been losing money because of the taxicab rate war and price cutting competition.

The Columbus Railway, Power & Light Company has been operating in the city without a franchise since Feb. 4, 1926. A 25-year franchise was rejected by the company in October, 1926, after the City Council had amended an ordinance to compel the company to extend Broad Street service from Hague Avenue to the west corporate limit. The

company contended this could not be accomplished because of the difference in gage of track. This together with objections to other minor stipulations was given by the company as its reasons for rejecting the franchise.

Municipal Ownership Defeated in Madison

At the election on April 3 the people of Madison, Wis., by a vote of about 8,000 to 5,000 defeated the referendum question providing for the acquisition of the Madison Railways by the city. Official figures are not as yet available. Madison also defeated municipal ownership of the railway eight years ago.

Both newspapers in the community, one a conservative and the other a La Follette organ and avowed municipal ownership newspaper, favored acquisition of the property. In fact, the conservative paper staged meetings in favor of municipal ownership, at one of which Carl D. Thompson, secretary of the Public Ownership League of America, appeared.

Swope District Pushing Through Service in Kansas City

Members of the Swope Land Improvement Association and residents of the Swope district of Kansas City, Mo., are agitating for the extension of railway and bus service to the downtown district. A number of civic meetings has been held and petitions circulated, and some support for the project has been promised in the City Council. More than 500 names have already been obtained on petitions requesting rerouting, and 1,000 are expected by the time the mass meeting is held.

F. G. Buffe, vice-president in charge of operations, said the Kansas City Public Service Company could not seriously consider the request for through cars until September, due to the unusual number of cars taken from service during rehabilitation. The small cars now used on the Swope line are not suitable for downtown use, and the company would not have enough other cars to use until the program of rehabilitation has been completed this fall.

Foreign News

English Tramway to Use Buses

At the annual meeting of the Yorkshire Electric Tramways, West Riding, England, it was decided that no dividend would be paid on the ordinary shares in order to preserve all available money to buy buses for use on the tramway lines which have been abandoned. It was said that owing to bus competition the element of good will has disappeared, reserves have been expended and further abandonments would doubtless follow.

Charge for the Return of Lost Articles in Glasgow

Small fees are now charged by the Glasgow Tramways to owners of property which has been lost on the cars when they go to the lost property room to reclaim it. Last year more than 20,000 articles found on the cars were returned to their owners.

New Tramway Line for Tallinn, Esthonia

Construction of a tramway line is now under consideration by the city street car administration of Tallinn, Esthonia, a republic on the Baltic Sea. The proposed line would connect the Vabaduse Platz in the center of the city with Kipli, the peninsular district of the suburbs, a distance of 6 miles. The cost is estimated at \$367,000.

When the new line is completed it is planned to lay a double line in the Suur Tartu Maantee. Construction of a street car connection between Tallinn and Piritu, a popular seaside bathing

beach and summer resort some 5 miles distant, is also contemplated.

Austria Criticised for Abandoning Railway Electrification

Great disappointment and surprise are felt throughout Austria at the decision of the authorities to proceed no further with the electrification program of the Austrian State Railways and to utilize for other ends the remainder of the funds set aside for this purpose out of the international loan.

It is claimed that portions of the electrified lines now in operation are working at a financial disadvantage. Owing to the consideration of the possibility of imported coal becoming cheaper and too favorable estimates of the cost of electrification, the initial calculations are said to be inaccurate.

This decision is being very sharply criticized by those who had praised the soundness of the government's former argument that the development of the country's water power would keep within Austria vast sums of money now spent on coal from abroad.

German Railway Bonds Offered

The Western Electric Railways Corporation, which operates interurban electric railway and automobile bus lines in Westphalia, Germany, offered on March 1 \$1,750,000 first mortgage twenty-year sinking fund 7 per cent bonds in the American market at 98 and interest, to yield about 7.20 per cent. Earnings are guaranteed by the municipalities which own these lines.

Recent Bus Developments

\$5,392 for Louisville Franchise

The Louisville Railway now owns the blanket franchise to operate buses on the streets of Louisville, Ky., for twenty years. At a perfunctory auction, at which no other bidders appeared, Thomas B. Crutcher, member of the Board of Public Works, awarded the franchise. The upset price named in the ordinance, under which the franchise was sold, was \$5,000 and the \$392 represents half of the advertising cost. James P. Barnes, president, bid in the franchise for the railway and deposited a certified check for the amount. The sale now goes to the General Council for ratification. Service on the announced bus lines will be started at once.

John Chandler, attorney for a group of jitney bus operators, asserted in a statement afterward that the sale for a mere nominal price to the Louisville Railway justified the allegation of the petition of the independent bus operators that the ordinance was passed exclusively for the Louisville Railway, in order to give it a monopoly of the city streets. The case may go to the Court of Appeals.

Protest from Washington Property

Officials of the Washington Railway & Electric Company will protest to Maryland authorities over an attempt of a bus line operating between Gaithersburg, Md., and Washington, to secure an intrastate rating. Over a large part of its course the bus line parallels an interurban line of the Washington Railway & Electric Company. Although under the present laws there can be no regulation of the interstate business of this bus route between Maryland and the District of Columbia, the electric railway will ask the state authorities to deny the bus line permission to compete with its line between Maryland points.

Protection for Railway in Ohio

The Ohio Supreme Court has upheld the Stark Electric Railroad in its fight against competition of the Sebring-Alliance Bus Company. Carrying a state certificate to the Supreme Court on the ground that it was illegal, the Stark Electric won a ruling which prevents the Sebring-Alliance Bus Company from making Sebring and Alliance, 4 miles apart, terminals.

Passengers boarding buses in either city must alight at the corporation line of the other, the Supreme Court ruled in referring the bus certificate back to the Ohio Public Utilities Commission for a revision. This ruling was made in face of petitions from bus riders, and also in face of testimony which shows

that the two transportation companies enter Alliance at points more than half a mile apart.

The fight was led by E. W. Sweezy, general manager of the Stark Electric Railroad, who for months has authorized court battles preventing increased competition between the railway and bus companies.

P.R.T. Seeks Approval of Bus Purchase

The Philadelphia Rapid Transit Company, operated by Mitten Management, Inc., has bought the Quaker City Cab Company and three small suburban bus concerns for \$1,825,000, \$2,325,000 less than their combined assets. This was announced by Ralph T. Senter, president of the transit company, before the Public Service Commission on April 4 in support of an application for approval of the transaction.

In an effort to prove that the rival companies were bought at "bargain prices," Mr. Senter introduced a consolidated balance sheet showing their assets as \$4,150,000. Separate statements revealed that all except \$650,000 of the assets belonged to the cab company. Its excess of assets over liabilities was given as \$3,500,000.

The Mitten organization operates the Yellow Cab Company, local trolley, subway-elevated and bus lines in the city of Philadelphia and several interurban bus lines running out of that city.

Contention Over Operations in Milford

A bus war is being waged in Central Massachusetts with Milford the strategic point. The cause is bound up with the filing of petitions of the Johnson Bus Lines Company, Inc., and the Medway & Dedham Bus Lines for permission to operate. Officials of the company have informed the selectmen of Milford they do not intend to operate buses over the proposed routes as long as railway service is maintained, but that they understand some of the railway lines of the Milford & Uxbridge Street Railway, which now serves that territory, are to be discontinued. On the other hand, word has also reached the Milford Selectmen that a new trolley and bus line company is in process of formation as a result of the recent sale of the Milford & Uxbridge Street Railway to Citron-Byer Company, Clifton, N. J.

The bus company operating between Medway and Dedham was also opposed recently before the Massachusetts Public Utilities Department by Fred A. Cummings, representing the public trustees of the Eastern Massachusetts Street Railway. He contended that a certificate granted to the bus company for oper-

ation between Blackstone and the Boston-Dedham boundary line would have a disastrous effect on the railway lines in Walpole, Norwood, Westwood and Dedham.

Parker Bill Up on April 10

The Parker interstate bus bill will be considered at a hearing April 10, according to an announcement from the Interstate Commerce Committee of the House. The legislative sub-committee of the American Automobile Association's bus division, which sponsors the measure, will present witnesses at the hearing. It is understood that the electric railway bill introduced by Representative Johnson of Indiana will be given a hearing after the bus measure is disposed of, although the exact date for this has not been determined. Extended reference to the provisions contained in the Parker bill was made in the issue of the ELECTRIC RAILWAY JOURNAL for March 31, page 559.

Franchise Sought by New York & Queens County

The Queens-Nassau Transit Lines, Inc., is petitioning for a franchise to operate a bus route to be known as the Murray Hill route. In effect, it will be an extension of the system of electric railway routes now operated in the Borough of Queens by Lincoln C. Andrews as receiver of the New York & Queens County Railway. The rate of fare on the proposed Murray Hill route will be 5 cents. It is proposed that free transfers be issued upon payment of cash fare from the cars of the New York & Queens County Railway to the buses of the Murray Hill bus route. Nine advantages of this route are listed in the application. The Murray Hill section would be connected with Jamaica, College Point, the Main Street section of Flushing, Jackson Heights and Corona by the free transfer privilege.

The Queens-Nassau Transit Lines, Inc., is organized under the Transportation Law of the state of New York. All its stock is held by the receiver of the New York & Queens County Railway. The receiver has received the consent of the bondholders committee of the railway to operate the proposed bus route. The present organization of New York & Queens County Railway will be used to operate this route.

Don't Need Bus in Brighton

The City Council committee on jitney licenses has rejected the petition of the Boston Elevated Railway, Boston, Mass., asking for authority to operate a bus line in Market Street, Brighton, between Western Avenue and Washington Place. An opinion derived from a hearing on the matter showed the public in that section to be favorably inclined to the railway service now in existence there.

Twenty Buses Destroyed in Newburgh Fire

Fire destroyed the garage of the Newburgh Public Service Corporation, Newburgh, N. Y., on the morning of March 30. Of the 20 buses in service in the city only one was saved. In addition, three private automobiles and five trucks were burned. The loss may exceed \$200,000, but the plant and equipment were fully covered by insurance.

The city was entirely without bus service Saturday morning, but arrangements were made at once to furnish a temporary service. Spare buses were secured from the Hudson Transit Corporation and the Cornwall and other lines, and arrangements were made to secure buses from out of town.

were not in regular service. The building covered a plot 200 ft. by 60 ft. It was valued at \$30,000.

Bus Scheme by Jamaica Company Not Sanctioned

The management of the Jamaica Public Service Company, Kingston, British West Indies, has been in communication with the government over the proposal to establish a bus service in the corporate area. The company intends to operate five or six buses of about 4½ tons but the scheme has been held up because it is in conflict with the motor car law, which prohibits motor vehicles of more than 2½ tons on the island.

with the same hourly schedule rendered by the interurban. On March 16 the receiver of the company was authorized to make this substitution by the court.

The service is being installed because of the possibility of a bridge being constructed across the Ohio River between Evansville and Henderson in the next two years. Work will very likely start some time this year and after the bridge is in operation, service by interurban over the ferry would be slow and undesirable to the public. The company has therefore requested to use buses.

Reading and the Bus

Public Service Commissioner Benn has approved the plan of the Reading Company to spend \$1,000,000 for buses and garage facilities at Pottsville and Doylestown during the first year of operation by the newly formed subsidiary, the Reading Transportation Company. The company is petitioning for transfer of 95 per cent of the stock of the subsidiary to the Reading Company. The testimony before Commissioner Benn dealt mainly with the program of bus operation intended for Schuylkill County. He overruled the objection of the Schuylkill Railways, Schuylkill County Railway and the Schuylkill Transportation Company that an interstate carrier such as the Reading Company could not acquire stock in an intrastate company.

When the hearing was concluded Commissioner Benn announced that the Reading application would be laid before the entire Public Service Commission with a recommendation for favorable approval.

Permanent Franchises Sought for Syracuse

Permanent franchises, to supplant the present temporary permits which expire this summer, are sought by the Syracuse Co-ordinated Bus Lines, Inc., which operates the bus lines of the New York State Railways in Syracuse.

Action by the municipal administration is expected soon, according to Benjamin E. Tilton, vice-president and general manager of the railways. Mr. Tilton will base his argument for the proposal on the fact that his company has put bus feeder lines and extensions into operation and has plans for many more similar lines.

The company will ask a fare for bus lines similar to that on the trolley lines. The bus fare now is 7 cents with transfer privileges. The trolley fare is 10 cents cash and 7½ cents for tickets.

Substitution on One Line in Oakland

The Key System Transit Company has been authorized by the California Railroad Commission to abandon service on its Rockridge line in the city of Oakland. It is planned to substitute bus service over the temporary route now in operation.



McGraw-Hill Photo

Fire did deadly work when it destroyed all but one of twenty-one buses

All the buses in the garage had been filled with gasoline immediately after the finish of the day's run and were arranged in the garage so they might be run out quickly when the morning work was resumed. The bus that escaped destruction by the fire was one used to take the employees to their homes after the system was shut down for the night. It was engaged in this task when the fire was discovered.

The garage was located on Wisner Terrace near the South Plank Road. The building was principally frame. It was built originally to house the street cars, but since the buses were installed to replace the local trolley lines, it had been used to store the buses when they

Evansville & Ohio Petition To Be Heard

April 9 has been fixed by the Indiana Public Service Commission as the date of a public hearing on a petition of the Evansville & Ohio Valley Railway for the right to run passenger bus service from Evansville, Ind., to Henderson, Ky. The company has been operating an interurban railway from Evansville to Henderson since 1912, over leased tracks of an abandoned line of the Illinois Central to the Ohio River where the interurban cars were ferried across the river and then operated into Henderson, Ky. It is proposed to succeed this service very shortly by bus operation

Financial and Corporate

Legislative Status at Boston Stockholders' Meeting

At the annual meeting of stockholders of the Boston Elevated Railway, Boston, Mass., held April 2 all acts of the directors in 1927 were ratified by a vote of the stockholders. No other business was done at the meeting, but a number of questions was asked about the status of proposed legislation. The only definite information that could be given was that no matter what the Legislature did this year there could not be any material change in the operation of the property in much less than two years. Should public ownership be adopted it might not require a full two years to execute the taking of the property.

After the Legislature has acted the stockholders will be called into special session immediately, if their vote or opinion is required; they will have nothing to say about the conversion of the property to public ownership, however, because that can be done by the commonwealth without their approval, under the option clause in the public control act of 1918.

Traffic, Fare and Wage Figures

Electric railway passenger traffic continued to fall off at an increasing rate during the month of December. The number of revenue passengers, including bus passengers, reported by 193 companies to the American Electric Railway Association for December, 1927, compared with December, 1926, is as follows:

December, 1927	819,663,893
December, 1926	844,205,989
Decrease, per cent.	2.91

The average cash fare in cities of 25,000 population and over:

	Cents
Jan. 1, 1928	8.0177
Dec. 1, 1927	7.9993
Jan. 1, 1927	7.7790

Average maximum hourly rates paid motormen and conductors in two-man service by companies operating 100 or more miles of single track:

	Average Hourly Rate cents	Index Number 1913 = 100 Per Cent
Jan. 1, 1928	57.27	210.17
Dec. 1, 1927	57.27	210.17
Jan. 1, 1927	56.88	208.73

Dividend Passed in Harrisburg

For the first time since April, 1921, the Harrisburg Railways, Harrisburg, Pa., has been forced to pass the semi-annual 3 per cent dividend on its preferred stock. This makes a total of 29 per cent in unpaid dividends on the preferred stock accumulated in the last twelve years.

During 1927 the Harrisburg Railways transported 31,141,287 passengers

as against 32,477,229 for the year previous. In 1923 the number of passengers hauled was 34,560,489. Despite the falling off in traffic last year the company's cars operated 12,700 more car-miles than in 1926. The company paid out in 1927 \$131,259 for track renewals and this year's program is estimated at approximately \$133,000, exclusive of what the railway will have to pay toward the cost of widening a subway in Harrisburg's business district.

Deal May Be Delayed

Modification of terms suggested for plan by which Insull would enter other Indiana Railways

TERMS of security exchange in the Insull-Morgan plan and agreement for consolidation of the Terre Haute, Indianapolis & Eastern Traction Company properties with the power distributing properties of the Central Indiana Power Company have been so altered that many more months may elapse before the consolidation will be presented for approval of the Indiana Public Service Commission.

Committees acting for security holders of the Indianapolis & Martinsville Rapid Transit Company, the Indianapolis & Northwestern Traction Company and the Indianapolis, Crawfordsville & Danville Electric Railway have been notified by Halsey, Stuart & Company, readjustment managers, that guarantees of interest and sinking fund payments had been withdrawn in the plan for securities they were to receive in the new consolidation setup.

QUESTION OF GUARANTEES PROVOKES DISCUSSION

New stock and bonds were to have been issued by the consolidation in the name of the Indiana Central Rapid Transit Company, formed by consolidation of the three interurban divisions. It was part of the first agreement that the new bonds and stock of this company be protected by annual sinking fund charges and interest payments guaranteed by the Indiana Electric Corporation, the operating company.

While the Central Indiana Power Company would like to add the electric distribution territories covered by the railway lines to its own far-flung Indiana system, the tone of the recent notice makes it appear that the Insull utility does not intend to assume responsibility for profitable operation of the railway lines. The power companies could expect profitably to devote some of their earnings to rehabilitation of the interurban lines, whose power distributing business they would like to have, but they do not appear to care to hazard the risk of operating the railway lines to the extent of making irrevocable guarantees.

Additional Securities to Be Authorized for Richmond

At the annual meeting of the Virginia Electric & Power Company, Richmond, Va., to be held on April 16, stockholders will be asked to vote on the question of authorizing the issuance of \$8,000,000 of first and refunding mortgage gold bonds. This is part of a \$20,000,000 issue, of which \$12,000,000 is now outstanding.

Stockholders also will vote on amending the charter to provide for an increase of \$5,000,000 in the authorized preferred stock of the company. The increased stock is to be 6 per cent cumulative preferred of the same class as the 6 per cent cumulative preferred now outstanding and is to be sold from time to time as the directors shall determine.

This action by the stockholders is desired in order that the company may have further securities of these classes available for prompt issue from time to time in the event it is deemed advisable to finance future requirements in this way.

Inclusion in New York Central System Sought

The Fonda, Johnstown & Gloversville Railroad, a short line connecting with the New York Central Railroad, has filed a brief with the Interstate Commerce Commission asking that the commission take action providing for its inclusion in the proposed system to be created by the lease by the New York Central of the lines of the Big Four and the Michigan Central railroads, for which application is now pending before the commission. The brief says:

We submit that in order to preserve and maintain this intervener's line in a healthy condition to serve its territory as a part of any national system of transportation, it must be included in the applicants' system, and that since the applicants are seeking the benefit of a portion of the consolidation legislation enacted by the Congress for the purpose of establishing such national system of transportation, they are under the duty of either including it in their system or making in their plan reasonable provision for its inclusion therein.

We, therefore, respectfully request that this commission shall take such action in the premises as it may deem necessary for the purpose of bringing about this result.

Results in Toledo Improve

Increased industrial activities and more favorable weather conditions have improved railway and bus operating results in Toledo. February operations of the Community Traction Company showed \$298,909 total revenue as against \$294,147 for the corresponding month last year. There was, however, a net deficit of \$15,090 to the stabilizing fund after expenses, taxes, reserves and charges made under terms of the Milner ordinance. This brings the total deficit to \$1,303,073.

The sinking fund requirements have

now ceased and indications are a change in results will be shown favorable to wiping out the deficit over a period of years. The sinking fund requirements have been \$25,000 or more each month.

Under the terms of the Milner ordinance in less than three years the voters will be called upon to extend the grant or begin a fifteen-year period of amortization of the property through fares collected. It is hoped to make a big cut in the deficit in this period or else reach some agreement on a new way out of the situation.

Merger Proposal in Washington Modified

The Public Utilities Commission of the District of Columbia has made public its changes in the merger agreement covering the Capital Traction Company, the railway lines of the Washington Railway & Electric Company and the Washington Rapid Transit Company. The changes now go to the companies for their approval.

The \$50,000,000 rate base called for in the agreement, which has been one of the features most vigorously attacked, was approved for a temporary period of ten years, after which the commission prescribes a revaluation.

The commission, however, removed the 7 per cent return provision from the agreement, and in its place inserted a clause which declares that the merged company shall be "entitled to earn a fair and reasonable" return on the \$50,000,000 valuation.

The commission also added another provision which stipulates that the present rate of fares shall continue in force for one year after the merger.

A letter outlining the modifications made in the agreement will be sent to the companies, with a recommendation that the changes asked be made, so that the document may be sent to Congress without further delay for ratification.

Among other changes which the commission recommended were:

That the commission be relieved of duty of nominating the three public representatives to serve on the board of directors of the merged company.

That the companies be relieved of paying certain costs for paving between their tracks.

That the companies continue to share the expense of repairing bridges over which their lines operate.

That nothing be included in the revised agreement which would limit the powers of the commission.

Morris County Receivers Directed to Pay Tax

Federal Judge William N. Runyon, of Newark, N. J., has signed an order directing the receivers of the Morris County Traction Company to pay taxes due to nineteen municipalities through which the defunct company operated railway lines. The total of taxes due is \$102,769 to be paid out of \$260,470 realized from the sale of assets.

More Passengers Carried in New Jersey

627,153,013 persons were transported by Public Service Corporation subsidiaries, of whom 266,079,948 were handled by bus. Net income of railway in red, but not income of buses \$513,668

A CONDENSED summary of the results of operations of Public Service Corporation of New Jersey and subsidiary utility companies for the twelve months ending Dec. 31, 1927, follows:

Operating revenues, gross earnings.....	\$115,005,908
Operating expenses.....	\$49,035,808
Maintenance.....	11,885,135
Depreciation.....	10,084,133
Taxes.....	11,930,113
	82,935,191
Net income from operations.....	\$32,070,717
Other income.....	906,178
Total.....	\$32,976,895
Deductions (fixed charges, etc).....	18,642,579
Balance for dividends and surplus....	\$14,334,315
Dividends on preferred stocks of Public Service Corporation of New Jersey:	
8 per cent cumulative preferred stock.....	\$1,722,496
7 per cent cumulative preferred stock.....	2,023,539
6 per cent cumulative preferred stock.....	1,286,117
	5,032,152
	\$9,302,163
Dividends on common stock of Public Service Corporation of New Jersey....	8,018,926
Net increase in surplus.....	\$1,283,237

During the last months of the year a large new engineering and construction company was formed under the name of United Engineers & Constructors, Inc., combining therein: The U. G. I. Contracting Company, Public Service Production Company, Dwight P. Robinson & Company, Inc., and Day and Zimmerman Engineering & Construction Company.

The new enterprise will be the largest of its kind in the world. Public Service Corporation of New Jersey will, hereafter, instead of owning all the stock of Public Service Production Company, own 40 per cent of the capital stock of

the new company. It is expected that the new company will execute annually a large volume of work in a manner that will result in the clients of the company receiving the best of service at the lowest cost.

There were 627,153,013 passengers carried on Public Service cars and buses during 1927, an increase of 29,822,141 over the number carried in 1926. This gain was due in part to the normal increase in traffic in the rapidly growing territory served and in part to the acquisition of bus lines from independent operators, the putting into service of new lines, extension of routes and the inauguration of lines giving a higher grade of service at a higher fare.

These various steps are in line with the announced policy of Public Service to create a co-ordinated system of car and bus transportation which will provide the kind and quality of service by street cars and buses needed to meet public requirements.

In the case of a number of street car lines of light traffic, it has been deemed advisable in the interest of economy and improved service to substitute bus service for the cars. In all such cases the results have been satisfactory.

There was established in January a charter car and bus department in charge of a general passenger agent. The result has been a substantial increase in the volume of charter bus and car business done. Special service has been operated to amusement parks, resorts, and to football games and like public gatherings. The possibilities of developing this service is indicated by the fact that on Sept. 11 as many as 109 buses were under charter.

On Oct. 28, a bus terminal for Williamstown buses, previously operat-

INCOME ACCOUNT FOR THE TWELVE MONTHS ENDED DEC. 31, 1927

	Public Service Railway	Public Service Transportation	Public Service Railroad	Other Affiliated Companies	Total
Operating revenues.....	\$18,231,215	\$14,893,121	\$291,009	\$1,954,260	\$35,369,607
Operating expenses.....	\$9,105,506	\$8,674,650	\$65,486	\$744,896	\$18,590,539
Maintenance.....	2,621,826	3,022,788	52,564	134,336	5,831,517
Taxes.....	2,052,298	820,943	48,498	166,098	3,087,839
Depreciation.....	876,962	1,617,399	.....	167,500	2,661,861
Operating revenue deductions.....	\$14,656,594	\$14,135,781	\$166,549	\$1,212,832	\$30,171,757
Operating income.....	\$3,574,621	\$757,339	\$124,459	\$741,428	\$5,197,849
Non-operating income (exclusive of dividends of affiliated companies)...	184,938	12,684	1,226	29,030	227,880
Gross income.....	\$3,759,560	\$770,024	\$125,685	\$770,459	\$5,425,729
Income deductions (bond interest, rentals and miscellaneous interest charges).....	5,076,875	256,356	95,399	37,903	5,466,535
Net income or loss.....	*\$1,317,315	\$513,668	\$30,286	\$732,555	*\$40,805
Profit and loss accounts (excluding dividends).....	†3,910	†6,003	675	.....	†9,238
Surplus (before dividends).....	*\$1,313,405	\$519,672	\$29,611	\$732,555	*\$31,566
Intercompany dividends.....	†324,574	.....	.....	324,574	.....
Dividends paid unaffiliated interests (directors).....	*\$988,831	\$519,672	\$29,611	\$407,981	*\$31,566
Net increase or decrease in surplus....	*\$988,831	\$519,672	\$29,611	\$407,755	\$31,792

*Deficit. †Credit.

OPERATING REVENUE OF SUBSIDIARY UTILITY COMPANIES OF PUBLIC SERVICE CORPORATION

Year	Electric Properties	Gas Properties	Transportation Properties	Total
1918	17,587,806	14,578,269	20,831,762	52,997,838
1919	20,054,659	14,941,745	24,140,356	59,136,762
1920	23,563,929	20,872,062	27,862,095	72,318,082
1921	24,390,321	23,516,318	27,404,867	75,311,507
1922	27,660,026	23,152,426	27,544,509	78,356,967
1923	31,188,595	24,814,283	23,105,003	79,107,882
1924	34,889,632	24,542,643	28,257,177	87,689,453
*1925	40,016,174	24,181,431	30,517,918	94,715,525
1926	46,954,362	26,286,246	33,062,600	106,303,209
1927	52,393,848	27,242,453	35,369,607	115,005,908

*Change in classification of accounts effective Jan. 1.

Earnings in Kansas City Short of Agreed Limit

Earnings of the Kansas City Public Service Company, Kansas City, Mo., in 1927 fell 25 per cent below the amount permitted under the new franchise. In January, 1927, the shortage was \$14,188 and for January this year the shortage was \$45,303. For the first two months last year the shortage was \$45,028, and in a similar period of this year it was \$109,747.

According to the company it should have earned \$2,065,110 last year under the franchise allowance, while the net earnings were only \$1,611,689. Under the franchise the company is allowed to earn \$2,000,000, plus 8 per cent on additions to capital. The figures in the statement as to the capital earnings are based upon estimate of 50 per cent of the amount spent for improvements as capital expenditures.

From Jan. 1 to March 18 revenue car passengers decreased 879,836 compared with a similar period in 1927.

Denton-Terrell Operation Shows Loss

Operations of the lines of the Texas Interurban Railway, one running from Dallas to Denton and the other from Dallas to Terrell, showed a loss of \$241,720 on March 1, according to figures compiled by Richard Meriwether, vice-president and general manager of the company. The Denton line, placed in operation Oct. 1, 1924, is \$307,584 short of earning the interest charges on its notes, while the Terrell line, started Jan. 14, 1923, has earned a net income of \$65,864 in its slightly more than five years of operation.

Operating revenues of the Denton line have dropped each month since the line was placed in service, and the Terrell line has failed to earn operating expenses during the last two months. Up to March 1, the Denton line showed operating revenues of \$421,498 and operating expenses of \$493,986. The Terrell line did fairly well the first two years, but business has been poor re-

ing to the Reading ferries, and Mount Holly and Swedesboro line buses, which had previously operated to the Pennsylvania ferries, was established at the Court House, Camden. This plan met with the approval of the citizens of Camden who desired to have "the transportation package broken" in that city and provided direct connection with Pennjersey buses operating over the Camden bridge into Philadelphia.

The labor turn-over in 1927 was the lowest in a number of years. The no-accident bonus system resulted for the year in payments made to 3,871 operators, and in an appreciable reduction in the number of accidents. The system modified in the light of the year's experience will be in effect during 1928. In addition to individual bonuses, awards will be made to the men assigned to the carhouse or garage in each division which makes the best showing in reducing accidents in each of three four-month periods into which the year is divided.

During the year the Public Service Rapid Transit Railroad was organized to take over the North Jersey Rapid Transit Company, the lines of which extended from Ridgewood Junction to Suffern, N. Y.

On Dec. 31, 1927, the mileage of railway and railroad lines amounted to 878,319 miles. During 1927 single-track extension amounted to 1,066 miles; 18,101 miles of track were relaid with new rail and 2,024 miles with old rail.

Six hundred and fifty-two cars were completely overhauled, 2,288 cars received general repairs, 1,272 cars were painted, vestibule window cleaners were installed on 1,355 cars, ten improved

type snow sweepers were built, and a large amount of other work was done in the company shops.

The bus fleet was added to and improved. One hundred and fifty-six new buses for additional service and 125 new buses for replacement were purchased in addition to 146 buses bought from independent owners. Eighty-two buses were completely and 639 buses partially overhauled, 926 buses were painted, 384 bus engines were overhauled, 65 bus bodies and two wrecking cars were built in the company shops.

On August 4, 1927, the Board of Public Utility Commissioners handed down its decision upon the application of Public Service Railway and Public Service Transportation Company for the adjustment of fare zones. The petition, in which was embodied the new tariff, was handed to the commission on Dec. 13, 1926. The operation of the tariff was suspended by the board and a number of hearings held thereon. Under the order of the board, the street car and fare zones under consideration, with some modification of the tariff filed by the company, were made coincident.

\$1,562,714 Paid to City by Chicago Railway

Authorization was given by Federal Judge James H. Wilkerson to the receivers of the Chicago Railways, comprising the north and west lines, to pay to the city by April 10, \$1,562,714. This amount is the 55 per cent of the net receipts of the company due to the city under the franchise for the fiscal year ending Jan. 31, 1928.

TRANSPORTATION STATISTICS OF PUBLIC SERVICE CORPORATION

Year	Trolley Passengers	Bus Passengers	Total Passengers	Trolley Mileage	Bus Mileage	Total Mileage	Trolley Hours	Bus Hours	Total Hours	Passenger Receipts Per Trolley Mile Cents	Passenger Receipts Per Bus Mile Cents
1918	451,220,806	.....	451,220,806	54,039,150	.....	54,039,150	5,698,089	.....	5,698,089	36.00	.....
1919*	396,689,234	.....	396,689,234	57,644,927	.....	57,644,927	6,039,453	.....	6,039,453	39.29	.....
1920	543,505,154	.....	543,505,154	60,798,743	.....	60,798,743	6,539,207	.....	6,539,207	43.21	.....
1921	435,679,801	.....	435,679,801	58,309,883	.....	58,309,883	6,212,276	.....	6,212,276	44.11	.....
1922	410,212,814	.....	410,212,814	56,419,982	.....	56,419,982	5,983,122	.....	5,983,122	45.59	.....
1923	354,194,933	1,952,059	356,146,992	49,272,078	505,322	49,777,400	5,206,092	60,663	5,266,755	42.75	22.43
1924	427,828,444	76,451,240	504,279,684	53,945,515	15,704,663	69,650,178	5,662,340	1,928,498	7,590,838	41.04	26.13
1925	416,788,621	146,053,237	562,841,858	50,115,119	27,506,493	77,621,612	5,402,008	3,273,801	8,675,809	41.32	27.41
1926	397,690,308	199,640,564	597,330,872	45,632,230	36,082,475	81,714,635	4,929,558	4,013,602	8,943,160	42.88	31.05
1927	361,073,065	266,079,948	627,153,013	42,224,517	49,106,910	91,331,427	4,549,538	5,059,313	9,608,851	42.13	30.05

*Mile zone system in effect from September 14 to December 7.

MILEAGE—DECEMBER 31, 1927

First main track	527,683 miles
Second main track and turnouts	293,209 miles
Connections, crossovers, wyes and loops	11,920 miles
Carhouse and yard tracks	45,507 miles
Total	878,319 miles
Total number of passenger cars available for operation:	Closed—273
Number of new passenger cars since 1933:	Closed—1493
Track reconstructed with new rail during 1927	18,101 miles
Track reconstructed with same rail during 1927	2,024 miles
Extensions built during 1927	1,066 miles

cently. During its operating life, up to March 1, the line showed a net operating revenue of \$440,465 and a non-operating revenue of \$15,513, or a total revenue of \$455,978. The interest charges totaled \$390,114.

Hourly service, installed when the line was started, is being maintained.

The Denton line is 38.5 miles long, the tracks of the Missouri-Kansas-Texas Railroad being used most of the distance. The Terrell line is 30.5 miles long. Both were built under terms of an agreement made when the city of Dallas awarded a new franchise to the Dallas Railway, now the Dallas Railway & Terminal Company.

Net Income in Buffalo \$100,146

Comparative income accounts for the years 1927 and 1926 have been submitted by B. J. Yungbluth, president of the International Railway, Buffalo, N. Y., to the stockholders. The figures are as follows:

INCOME ACCOUNT OF INTERNATIONAL RAILWAY YEARS ENDED DEC. 31,		
	1927	1926
Passenger revenue.....	\$10,006,590	\$10,284,382
Other revenue.....	355,773	365,989
Operating revenue.....	10,362,364	10,650,371
Way and structures, equipment and power		
Maintenance.....	1,545,790	1,571,709
Depreciation and renewals	1,016,000	1,016,000
Power operation.....	2,561,790	2,587,709
Conducting transportation..	618,573	648,086
General and miscellaneous..	2,778,973	2,999,941
Taxes.....	2,212,214	2,216,135
	741,919	741,405
Operation and taxes.....	8,913,470	9,193,276
Operating income.....	1,448,893	1,457,094
Non-operating income.....	73,247	49,799
Gross income.....	1,522,141	1,506,894
Interest.....	1,326,708	1,363,017
Rentals.....	46,223	46,131
Amortization of discount..	49,063	49,136
Income deductions.....	1,421,994	1,458,284
Net income.....	\$100,146	\$48,609

\$263,055 Available in San Diego for Charges and Surplus

The San Diego Electric Railway, San Diego, Cal., reports to the Railroad Commission its 1927 operating revenue at \$1,676,501 compared with \$1,667,519 for 1926. The operating expenses, excluding taxes for 1927, are \$1,381,324 and \$1,350,373 for 1926, leaving a net operating revenue of \$295,176 for 1927, and \$317,146 for 1926. During 1927 taxes charged to operation amounted to \$124,387 and for 1926 to \$113,828. Deducting the taxes leaves operating income of \$170,789 for 1927, and \$203,318 for 1926. Adding to the operating income, the non-operating income of the company and deducting non-collectible revenue and rents, results in a gross corporate income, which represents the amount available for interest, amortization of debt discount, other fixed charges, non-operating expenses, dividends and surplus of \$263,055 for 1927, compared with \$292,053 for 1926.

4 Per Cent Public Utility Bonds

PERHAPS the most vivid illustration of the downward trend in bond yields during the past few years has taken place in the list of public utility securities. Investment bankers recall that only a few years ago the ruling rates on utility bonds ranged from 6 and 7 to 8 per cent. In no other group, however, has the refunding operations into lower interest bearing issues been so rapid or extensive as among the utilities and perhaps in no other group has the intrinsic value of securities appreciated more. With many of the recent 4½ per cent offerings now selling substantially above par, a 4 per cent coupon rate on utility bonds may not be far off. —Wall Street News.

Expansion in Maine Reported by Insull Interests

The Insull interests are negotiating for the control of the Cumberland County Power & Light Company, Portland, Me., to be merged with the Insull-controlled New England Public Service Company. The latter company operates properties in Maine, New Hampshire and Vermont.

\$973,544 Paid in Tampa for Transportation

Transportation earnings of the Tampa Electric Company, Tampa, Fla., for the year ended Dec. 31, 1927, were \$993,214 compared with \$1,279,941 for the year ended Dec. 31, 1926. According to the annual report of the stockholders 18,756,851 passengers paid \$973,544 for transportation; the revenue balance of \$19,669 came from miscellaneous sources such as special concessions, special cars and rent of equipment. Operating expenses in the transportation department were \$548,208 and transportation maintenance was \$166,613.

The company owns 158 cars and 31 buses.

The number of passengers carried, excluding transfers over a period of years, was as follows:

1916.....	10,872,102	1922.....	17,032,058
1917.....	11,107,645	1923.....	16,451,400
1918.....	11,958,831	1924.....	16,123,569
1919.....	14,247,180	1925.....	21,641,839
1920.....	15,260,820	1926.....	23,920,188
1921.....	17,224,084	1927.....	18,756,851

Nebraska Interurban to Go Out of Business

The Omaha, Lincoln & Beatrice Railway, built only to the Lincoln suburb of Bethany but with a roadbed constructed for some distance out of Omaha, is shortly to go out of existence, according to General Manager Bramlette. Although it has never paid operating expenses its owners, residents of Akron,

Ohio, were content to keep it running. Recent orders on paving by the City Council have placed a burden of cost that the road is reluctant to assume, and abandonment of the track within the proposed paving district has been asked.

HOLDERS OF ILLINOIS POWER & LIGHT URGED TO CONVERT PREFERRED

Clement Studebaker, Jr., president of the Illinois Power & Light Corporation, Chicago, Ill., in a statement made to the holders of the preferred stock of the company enclosed with the April 1 dividend checks said:

You previously have been advised of the possibility of your 7 per cent cumulative preferred stock being called for redemption at \$105 a share plus dividend accrued to date of call, and of the plan to create a new class of cumulative preferred stock to be offered in its place.

As stated, this plan is subject to the favorable action of the stockholders and the approval of the Illinois Commerce Commission. After such acceptance and approval, the call will be made.

It is gratifying to us that the 7 per cent stock has proved such a profitable investment for each of our stockholders and when definite notice of call and offer is received, we trust you will accept our offer to reinvest your funds with us in our new \$6 dividend cumulative preferred stock. Many stockholders have indicated their desire to reinvest their funds in this company, with whose affairs they have grown so familiar, and we sincerely hope you will not dispose of your 7 per cent preferred stock or make commitment for reinvestment until you have received our exchange offer.

The plan of the company to call the 7 per cent preferred stock was described in the ELECTRIC RAILWAY JOURNAL for Feb. 25, page 339.

New Director for Scioto Valley Line

Gilbert L. Fuller has been elected a member of the board of directors of the Scioto Valley Railway & Power Company, Columbus, Ohio, to fill the vacancy caused by the death of the late F. R. Huntington, Columbus banker.

Defunct Material Taken Over in Olean

The city of Olean, N. Y., will take over the bridges, real estate, power lines and tracks of the defunct Olean, Bradford & Salamanca Railway, within the city limits, on or before May 1. The compromise has been agreed upon between the receivers for the company and city officials following a year's litigation.

At the time the railway suspended operations it was in arrears more than \$10,000 in city taxes and in excess of \$26,000 in paving assessments.

In the summer of 1927 Supreme Court Justice Noonan issued an order authorizing the receiver of the Olean, Bradford & Salamanca Railway to discontinue operation of the interurban line between Bradford, Pa., and Salamanca, N. Y., and scrap the properties.

Legal Notes

CALIFORNIA—*Duty of Person Driving Automobile on Car Track.*

While a person who is driving a vehicle along or in close proximity to a car track is not bound to keep a constant watch behind for approaching cars, it is his duty to turn off the track when he sees or hears a car approaching from the rear, or could see or hear it by the exercise of reasonable care. He should listen for signals of approaching cars and should heed any that he may hear. [Berguin vs. Pacific E. R. Co. 263 P., 220.]

FEDERAL CIRCUIT COURT—*Jurisdiction of Federal Court Should Be Liberally Exercised. Duration of Grants Without Time Limit.*

When the jurisdiction of a federal court is called in question, the subject should be construed liberally so that the case in point may be indubitably heard and determined. When acting in a proprietary capacity, a city is subject to many of the same restrictions as a private individual. Where grants by a city of right-of-way to a street railway are unlimited as to duration and contain the power of assignment, the grants are without time limit in the absence of constitutional or statutory limitations. [City of Denver vs. Denver T. C., 23 F. (2d), 287.]

ILLINOIS—*Commission Cannot Grant Certificate to Competing Company When Existing Service Is Adequate.*

Overwhelming testimony indicated that the service a bus company was giving was adequate. A competing company received a certificate because it offered a longer route. It was held that that the commission could require additions to and modifications of the service of the existing company, but could not refuse to renew its certificate if it was willing to make these changes. [Wilcox Transportation Co. vs. Commerce Commission, 159 N.E. 788.]

MASSACHUSETTS—*Street Railway Is Liable for Injuries Caused by Improper Removal of Snow From Its Tracks.*

A street railway has the right to remove snow from its tracks, but it is bound to exercise reasonable care and diligence in doing so, and if it negligently produces an obstruction rendering traveling unsafe, it is liable for injuries caused thereby. [Graul vs. Boston Elevated Railway Co., 159 N.E., 606.]

NEW YORK—*Operation of Motor Bus Without Authority Does Not Preclude Recovery for Injury to Bus in Collision.*

A motor bus in New York was operating under a permit from the Department of Plant and Structures of the city,

but the Public Service Commission had not given its approval to the operation so that the bus was illegally carrying on the business of a common carrier of passengers. This violation of the statute, however, had no direct connection with the injury which it suffered from a collision. The illegality consisted not in the operation and use of the streets by the bus, but in the carrying of passengers for hire. It is only in the case where a violation of a statute or an ordinance has such a direct connection with the injury which has been received as to form and be a part of the act causing the injury that the law bars recovery for the injury received. Moreover, the statute governing the licensing of common carriers prescribes penalties for failure to comply with them. The courts must not add other penalties. It cannot be said that the bus, within the meaning of the law, was a public nuisance and interfering and obstructing the streets when it was legally on the streets, although used for an unauthorized purpose. Hence, when a street car negligently injured such a bus in a collision, the railway company was responsible. [Klinkenstein vs. Third Avenue Ry., 158 N. E., 886.]

NEW YORK—*Power of Railway Company to Control the Union Affiliations of Its Employees Is Defined.*

This was a suit of injunction brought by the Interborough Rapid Transit Company against E. P. Lavin individually and as president of a union to prohibit him and other defendants from inducing the company employees to leave its employ. It also asked damages for acts during the strike in July, 1926. As a result of that strike the defendants were discharged from the employment of the company. The court held it could act in labor disputes only where there was a probability of unjustified interference with the company's rights. It held that the company could determine for itself the conditions of employment on its railway which will best assure the interests of public and company, provided it can induce sufficient workers to accept these conditions. It may refuse to employ workers who will not make an agreement that they will not join a particular union or combination of workers while in the company's employ. The company claimed that it had done this when it had accepted the constitution of a brotherhood of its employees, one of whose rules obligated its members not to become identified in any manner with the Amalgamated Association, or any other association of street railway or other employees, with the exception of the brotherhood, and that a violation of this agreement would constitute cause for dismissal from the employ of the company. The court held that this condition did not necessarily imply a binding contract between the company and

each individual employee, as the parties directly concerned were the brotherhood and the employees. Efforts of the defendants to instigate a strike while in the employ of the company or to recruit members for the Amalgamated Association after they had left the company's employ are not necessarily unlawful acts, though they may be so. Extracts from this portion of the decision were published on page 92 of the issue of this paper for Jan. 14, 1928. In the belief that the original injunction was too broad, the Court of Appeals remitted the motion to the special term, so that it might exercise its discretion as to whether an injunction of more limited scope should issue upon the facts contained in the record. [Interborough Rapid Transit Co. vs. Lavin et al. 159 N. E. 863.]

OHIO—*Stoppage of Automobile on Wrong Side of Street Except Because of Emergency or Some Regulation of Law Is Negligence per se and Not Prima Facie Negligence.*

While an automobile was crossing a bridge over a steam railroad, smoke from a passing train partly obscured the roadway and to avoid it the driver turned to the left-hand side of the road where he was struck by a trolley car. In the trial court the judge read to the jury sections of the general code which forbade a driver to obstruct the left-hand side of the road except "by reason of other lawful regulations or emergencies." Judgment for the plaintiff was reversed in the Court of Appeals on the ground that this action gave the jury the impression that the action of the driver was justified. It was not, as there was no such emergency. Violation of a statute is negligence per se and not prima facie negligence. [Cleveland Ry. vs. Kuncic, 159 N.E., 96.]

TEXAS—*Injury to Automobile Guest Where Motorman Discovers Peril After Driver's Negligence.*

In a personal injury action against an automobile driver and a railway company by an automobile guest, the jury found the railway was negligent after the peril was discovered. This was held not to affect the error of the trial court in refusing to submit to the jury the issue whether the automobile driver's negligence in failing to keep a lookout was not the sole proximate cause of the injury. [Northern Texas T. Co. vs. Woodall et al., 299 S.W., 220.]

WYOMING—*Grant by Commission Subject to Change by State.*

A certificate of public convenience and necessity, issued to a transportation company, may be altered later as it is subject to a reasonable exercise of the state's police power. Anyone attacking a statute as unconstitutional must point out the specific constitutional provisions claimed to be violated and show that the statute is unconstitutional as to himself, not merely that it is unconstitutional as to other persons or classes. [Salt Creek T. Co. vs. Public Service Commission, 263 P., 621.]

Personal Items

Frank Pick of London Honored

Frank Pick, formerly joint assistant managing director, of the Metropolitan District, London Electric, City & South London, and Central London Railways, and the London General Omnibus Company, has now become managing director.

In 1902 he entered the service of the North Eastern Railway under Sir George Gibb, then general manager, and worked successively in the statistics office, district superintendent's offices at Sunderland and Newcastle-on-Tyne, the rates offices and, finally, in the general manager's office. In 1906 he removed to London with Sir George Gibb when Sir George took over the management of the Metropolitan District and London Electric Railways. Upon Mr. Gibb's retirement in 1907, Mr. Pick was transferred to the staff of A. H. Stanley, now Lord Ashfield. He was born at Spalding in Lincolnshire in 1878. He was educated at St. Peter's School, York, and was later articulated with George Crombio, solicitor, York. In 1902 he qualified as a solicitor and in 1903 became L.L.B. (London University).

C. E. Morris in Toledo

Coincident with the announcement of plans to speed up the service of the Community Traction Company, Toledo, Superintendent Forsgard made it known that C. E. Morris, until recently schedule engineer with the Cleveland Railway, Cleveland, Ohio, has been named superintendent of schedules for the Community Traction Company. Mr. Morris previously had considerable experience in schedule work for the United Railways & Electric Company of Baltimore. He is making a study of the schedules on a number of lines other than the Cherry Hill one, on which changes have been made, and similar plans for bettering service on other lines are to be announced soon.

"Goofy" Complaints in Omaha Investigated

The difficulties of pacifying railway employees and patrons in Omaha, Neb., were recounted in the March 11 issue of the Omaha *Bee-News* in an interview with William C. Baughman, the new head of the newly-established complaint department of the Omaha & Council Bluffs Street Railway. Mr. Baughman tells about the wailings of the woman who tore her sheer hose and the argument of the defiant motorman who just wouldn't let a passenger open the window on a freezing night. He at one time piloted one of the cars on the Dundee line. After serving as trainman for eight years he spent eight more years in the lost and found department and the claim department. He hasn't much

time to complain himself—he's so busy adjusting the troubled affairs of others. When President Shannahan moved to Omaha he announced that every deficiency in the service had to be eliminated and this complaint department is part of this idea. But Mr. Baughman says "we don't think much of the ordinary knockers, the folks who write in and tell us what is wrong with the service, but refuse to sign their names." He adds that where the complaints were merited additional service had been installed as a result of their reception.

Official of Binghamton Railway in City Post

Vine W. Burley, superintendent of the Binghamton Railway, Binghamton, N. Y., is a railway official who has given serious heed to the admonition of the soothsayers of the electric railway



V. W. Burley

industry that men engaged in railway work shall do something for communities other than just run their railroad, no matter how well they may do that. In consequence, ever since Jan. 1 Mr. Burley has been commissioner of public work of Binghamton, to which office he was appointed on Jan. 1 by Mayor-elect Norman A. Boyd.

It is said that at first Mr. Burley doubted his ability to serve two masters successfully, but if he did have any doubts his mind was relieved of them by William H. Riley, receiver of the railway, who would not listen to the idea of the railway losing so competent an official. As a result the city is happy, Receiver Riley is happy, and the employers of the Binghamton Railway are happy—and Mr. Burley is happy, but busy. Not only is Mr. Burley getting lots of different kinds of experience in his city post, but he is enjoying the work. He spends certain hours each day with the railway, and it is perhaps not without the pale and in accordance with facts to say that he really likes his work with the railway better than he does that with the city.

In announcing his selection of Mr.

Burley, Mayor-elect Boyd said the appointment was a purely personal one and had been made without reference to politics, as he had not inquired whether Mr. Burley was a Republican or a Democrat. The Mayor said:

I have chosen Mr. Burley because I believe him to be well qualified for the important position he is called upon to fill, and that the best interests of the taxpayers will be served in making this appointment.

Mr. Burley is a man of wide experience in handling men, has held responsible executive positions in the past and is possessed of ability that will prove of great value to the taxpayers.

Certainly the Mayor appraised him correctly when he said Mr. Burley would aim to operate the department of public works on a practical basis and give the taxpayers full value for money expended.

Mr. Burley was born in Mills, Pa. He worked his way through Cayuga College, graduating with the highest honors in his class. He became associated with the Pennsylvania Railroad and rose to a position that gave him charge of the engineers and firemen on that road. His headquarters were in Philadelphia, and he was connected with the road for ten years, leaving Philadelphia seventeen years ago to go to Binghamton as superintendent of the Binghamton Railway.

Obituary

Dr. Delos F. Wilcox

Dr. Delos Franklin Wilcox, franchise and public utility authority, author and lecturer, died of pneumonia on April 4 in New York after a brief illness. In his practice as a public utility expert he advised many cities on franchise, rate and valuation matters. Dr. Wilcox was much in the public eye in connection with this work, but was probably most widely known for his advocacy of municipal ownership and for his book in two volumes "Municipal Franchises." Dr. Wilcox was also the author of many shorter treatises on municipal problems. His writings were noted for their clearness and the force with which he presented his ideas.

Born in 1873 near Monroe, Mich., Dr. Wilcox was educated at the University of Michigan and Columbia University, receiving the degree of Ph.D. from the latter. For some years he was engaged in work relating to improved city government, first in Cleveland and later at Grand Rapids and Detroit.

In 1907 he came to New York to become chief of the bureau of franchises of the Public Service Commission for the First District, which was then being organized. He resigned in 1913 to enter private practice as a public utility expert. In 1914 he was appointed deputy water commissioner of the City of New York by Mayor Mitchel. He resigned from this post in 1917 to resume his private practice. In 1919-20 he acted as adviser to the Federal Electric Railways Commission.

Manufactures and the Markets

Employment Situation Basically Sound

Surveys by government departments and others indicate less unemployment than some persons have intimated. A great readjustment in industrial employment is taking place

BY JULIUS KLEIN

Director Bureau of Foreign and Domestic Commerce

IN ESTIMATING the present situation there seems to be a prevailing tendency simply to take statistical soundings as to the depth of the business stream at random spots, with only an occasional effort to gage the force and direction of its current, its general trend, whence it has come and whither it is carrying our commercial and industrial crafts—and at what speed. After all, the outstanding feature of our business life is its extreme mobility.

The type of queries as to current conditions which are now coming to the Department of Commerce—and our inquirers now number 10,300 a day on the average—indicate certain definite shortcomings of our present business statistical apparatus. In the first place, there is entirely too much of it; at least the average merchant or industrialist who hasn't a staff of business analysts in his own business organization seems to think so. He feels the necessity of having segregated for him a few outstanding figures of prime utility for his purposes. This task of selection is clearly one in which his trade association and business papers can be of immediate and special help. The business community no longer wants "bigger statistics," but better ones. Secondly, our correspondents complain of a persistent tendency to overwork available figures.

Thirdly, on the major problem of unemployment, we are clearly behind Europe in the accuracy of our statistical data. It is most gratifying that the Department of Labor has undertaken an authoritative study, and it is hoped that it may lead to a systematic check of this highly important problem.

A characteristic instance was in the case of the Baltimore figures, which were given at the outset as 70,000 by one group of advocates, subsequently as 36,000 by another agency, whereas the actual house-to-house count by the Department of Labor revealed only 17,000.

A fourth weakness in our business figures, as currently interpreted, has been revealed in miscalculations in some quarters based upon the returns from chain stores and mail order houses. The increasing gross returns from these sources have been taken to indicate improved buying power in spite of the clearly evident factor that in each case the number of stores involved has been notably increased. If deductions are made for this factor, the returns in the main do not indicate any relative increases in business.

Broadly speaking, there are just a few

outstanding figures which, for current average use, seem to be of special value. The trend of electrical energy consumption offers a decline gage in a wide range of industries. Incidentally, the February figures, as tabulated by the McGraw-Hill Company, indicate a substantial increase over February of last year for every industrial group with the exception of lumber. In some cases

the gain is unusually high—nearly 42 per cent in the case of rubber, nearly 40 per cent in automobiles, nearly 29 per cent in stone, clay and glass, more than 26 per cent in metal working plants, 21 per cent in rolling mills and steel plants, and 18.5 per cent in chemical and allied products.

Another figure, which seems to be getting wider currency, is that of the Department of Commerce on building contracts, as distinguished from simply permits. Here again the figures are encouraging, running 10 per cent higher during the first ten weeks of 1928 as compared with a year ago. Indeed, in residential building the figures of the first two months of this year are 32 per cent over 1927.

Inventories are also being more and more widely used as a ready clue to the actual mobility of demand. Here, the situation in mid-March is not at all discouraging. Of course, from the point of view of the manufacturer the increas-

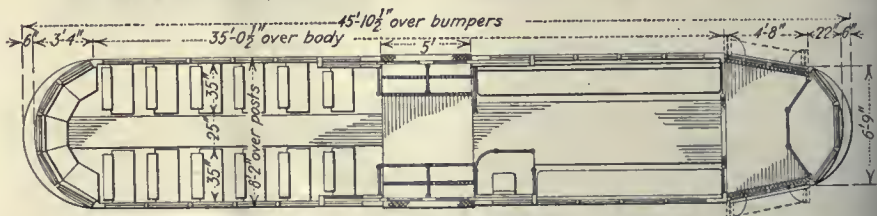
Twenty Units Delivered to Mexico Tramways

Twenty cars for the Mexico Tramways, Mexico City, Mexico, have been delivered by the J. G. Brill Company, Philadelphia, Pa. The cars are of the

two-man, single-end type. They weigh 38,950 lb., are 45 ft. 10½ in. long and are arranged for pay-as-you-pass fare collection. They seat 49 passengers.



One of the twenty units delivered to the Mexico Tramways Company



Floor plan of the New Mexico City cars

Name of Railway	Mexico Tramways	Curtain material	Pantasote
City and State	Mexico City, Mexico	Destination signs	Hunter
Number of units	20	Door mechanism	National Pneumatic
Type of unit	Two-man, motor, passenger, city, single end	Doors	Folding-end, sliding-center
Number of seats	49	Fare boxes	Cox
Builder of car body	The J. G. Brill Company	Finish	Enamel
City and state	Philadelphia, Pa.	Gears and pinions	General Electric Grade M
Date of order	May 27	Glass	D. T. A.
Date of delivery	October 27	Hand brakes	Brill
Weights: car body	19,625 lb.	Hand rails	Aluminum
Trucks	11,935 lb.	Headlights	Crouse-Hinds
Equipment	7,390 lb.	Headlining	Agasote
Total	38,950 lb.	Interior trim	Cherry-stained and aluminum
Bolster centers	23 ft. 3½ in.	Journal bearings	Plain
Length over all	45 ft. 10½ in.	Journal boxes	Brill
Length over body posts	35 ft. 0¼ in.	Lamp fixtures	General Electric
Truck wheelbase	4 ft. 10 in.	Motors	Four G.E.-275A, outside hung
Width over all	8 ft. 4 in.	Painting scheme	Durban red
Height, rail to trolley base	10 ft. 11¼ in.	Roof material	Canvas
Window post spacing	2 ft. 5 in.	Safety car devices	Door interlock
Body	Semi-steel	Sash fixtures	National Lock Washer Company
Roof	Arch	Seats	Brill
Doors	Center-exit, end-entrance	Seat spacing	2 ft. 4½ in.
Air brakes	General Electric	Seating material	Cherry slat
Armature bearings	Plain	Steps	Front-folding, center-stationary
Axles	A.S.T.M. annealed	Step treads	Feralun
Car signal system	Faraday buzzers	Trolley catchers	Earle
Compressors	CP-28-D	Trolley base	U. S.-13
Conduit	Metal	Trolley wheels	General Electric No. 48
Control	Type K	Trucks	Brill 76-E-1
Couplers	Brill self-supporting radial	Ventilators	Brill exhaust type
Curtain fixtures	Curtain Supply Company	Wheels, rolled steel	28 in. diameter
		Wheelguards	Root lifeguard

ing tendency toward hand-to-mouth buying, which is in part the explanation for the prevailing favorable low position of inventories, is not an altogether attractive indicator.

Two commodity figures, which are less widely used but which offer attractive possibilities as definite indicators, are the trends in consumption of machine tools and of office appliances. These are both rather definite indices of the readiness of the manufacturer and merchant to back up their judgment as to the outlook with concrete preparations.

In addition to these factors there are, of course, the basic ones of the availability of credit and the conditions in such major industries as automobiles and steel. Automobile production, exclusive of the Ford operations, is now more than 33 per cent over figures for the corresponding period of 1927.

March operations in iron and steel continued at the February rate of 85 per cent compared with 91 per cent a year ago. Price advances are being maintained and the prospects continue favorable.

The trend of our imports is also being noted by competent observers as a useful index of the growing demand for raw materials. February imports exceeded \$353,000,000, which was 13.5 per cent larger than February, 1927, though, of course, it must be remembered that there was one more day in the month this year.

With reference to the unemployment situation, precise figures are not available at this writing, but preliminary indications are that the totals revealed on the basis of accurate samplings now being taken in various districts will be very materially below the estimates of recent weeks. As Secretary Davis quite properly pointed out, three-quarters of a million, even a million, unemployed is a more or less normal feature of any such vast industrial area as the United States, particularly at this seasonal turn of the year. Our real objective should be the elimination of surplus employable labor.

Much of the recent situation was quite evidently seasonal, and even more of it was sharply regional. The tendency of all too many casual observers was to generalize on the basis of momentary local observations. Fundamental variations are constantly going on, not only as among different regions at any one time, but also in any one region over a period of seasons. This obvious truism seems to have been overlooked by some current observers.

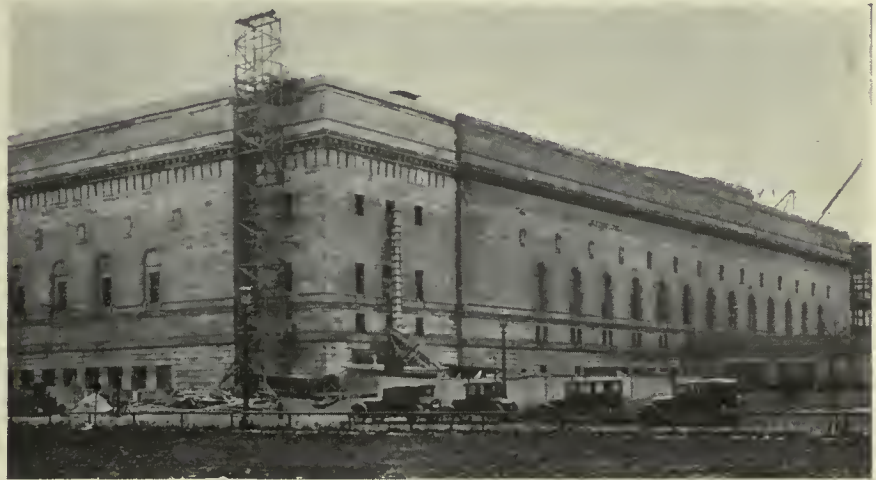
The shrewdest perception of our most erudite counsellors has revealed no one panacea for this situation, not even the rigid maintenance of a high wage scale. Invaluable though that factor is as a rule, it can on occasions be carried to disastrous extremes. One of the most helpful contributions toward the alleviation of this regrettable accompaniment of every profound industrial evolution such as ours, was that recommended by Secretary Hoover at the time of the Unemployment Conference in 1921. At

that time he urged the "accurate study by civic bodies of the character of the industries in their respective centers in an endeavor to discover opportunities for integrating industries to intermesh with each other in the reduction of seasonal idleness." Another corrective which is

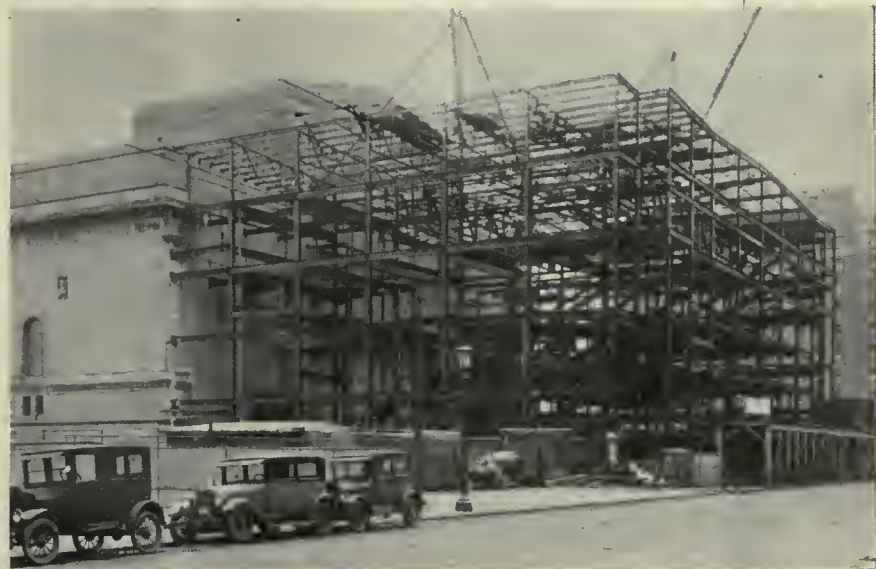
now very much to the fore is the allocation of public works to the slump periods in the employment curve.

One of the inevitable costs of our progress in waste elimination and in more efficient protective methods has been the displacement of labor. This

Space Applications for A.E.R.A. Show Ready



The Lakeside Avenue side of the Cleveland Public Auditorium, which is almost completed. It contains lobby accommodations, restaurant, lounge, meeting room and a grand ball room



When the St. Clair Avenue side of the auditorium is finished it will have facilities for two theaters

Applications for show space at the 47th annual gathering of the American Electric Railway Association, to be held in Cleveland from Sept. 22 to 28, inclusive, will be mailed to all members on April 14. The Cleveland show will open promptly at 9:00 a.m. Saturday, Sept. 22. All applications received up to the close of business May 14, will be awarded space by the exhibit committee, which is scheduled to meet May 16 to make the official allotment. If any space remains unsold after the initial allotment has been made, it will be assigned by the director of exhibits, in the order in which applications are received.

Exhibits will occupy both floors of the Cleveland Auditorium as well as the entire annex. The two buildings are connected with a covered passageway in which there will be operating maintenance-of-way exhibits. Track space for the display of street cars will also be provided.

Railway material, cars, buses and bus accessories, shop tools, garage equipment, etc., will be shown, as well as many other items pertinent to the transportation industry. An unusually large and varied display is expected. Last year there were 293 exhibiting companies and a total of 8,024 delegates.

development, plus the deflation of our wartime industrial abnormality, has resulted in a net decrease in employees in our factories of something like 917,000 since 1920. This substantial figure, if added to the 800,000 represented in the decline of employees in agriculture and the 240,000 relieved from the railroads since the war, gives a formidable total of displaced labor of nearly two millions.

There has, however, been a most helpful corrective, which has taken up most, though perhaps not all, of the slack, namely the astonishing increase in non-manufacturing pursuits. For example, since 1920 there has been an increase in the number of workers in automobile servicing and distribution of nearly 760,000. There are nearly 100,000 more insurance agents clamoring at our doors today than in 1919. Another 100,000 increase is estimated in the service employees of electric refrigeration, light and power, and oil heating establishments. The management, servicing, and general direction of construction accounts for an increase of another 100,000 in the same time. There are 232,000 more teachers and professors required today than in 1919. The increase in motion picture servitors, exclusive of production, accounts for another 125,000 added to the cinema industry since the war. It is not hard to explain the increase of 170,000 barbers and hairdressers during the same time. Service personnel of hotels and restaurants has increased by 525,000.

All of this is offered as by no means an attempt to dispute the perfectly evident fact that there is unemployment, perhaps in greater quantity today than for some months past. It is offered solely as one phase of the employment situation which is apt to be overlooked, and without which any observations upon the over-capacity of industries, or the alarming deflation of our factory payrolls through greater efficiency, simply cannot be properly understood.

The first and indispensable safeguard of our prosperity is to minimize waste, to concentrate every possible individual exertion toward widening the present rather narrow margin of profit by cutting in on production cost on the one hand and the expenses of distribution on the other. Our chief task in the future seems to lie in further economies in distributive effort. The volume of output, however, economically achieved, is of no ultimate value whatsoever in our operations without a corresponding volume of profit to the manufacturer.

Root Snow Scrapers for Holland

The Noord-Zuid-Hollandsche Tramweg Maatschappij, Haarlem, Holland, has ordered from the Root Spring Scraper Company, Kalamazoo, Mich., two No. 1 and two No. 8 snow scrapers.

An order for 38 Root life-guards has also recently been received from Pittsburgh. The 125 cars recently shipped to Detroit and the twenty cars shipped to the Mexico Tramways, Mexico City, were equipped with Root life-guards.

METAL, COAL AND MATERIAL PRICES F. O. B. REFINERY

Metals—New York		April 3, 1928
Copper, electrolytic, cents per lb.	.....	14.00
Copper wire, cents per lb.	.....	16.125
Lead, cents per lb.	.....	6.10
Zinc, cents per lb.	.....	6.075
Tin, Straits, cents per lb.	.....	53.375
Bituminous Coal, f.o.b. Mines		
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons.	.....	4.15
Somerset mine run, f.o.b. mines, net tons.	.....	1.875
Pittsburgh mine run, Pittsburgh, net tons.	.....	2.00
Franklin, Ill., screenings, Chicago, net tons.	.....	1.825
Central, Ill., screenings, Chicago, net tons.	.....	1.675
Kansas screenings, Kansas City, net tons.	.....	2.375
Materials		
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	.....	15.30
Weatherproof wire base, N. Y., cents per lb.	.....	16.5125
Cement, Chicago net prices, without bags.	.....	2.05
Linseed oil (5-bbl. lots) N. Y., cents per lb.	.....	10.00
White lead in oil (100-lb. keg), N. Y., cents per lb.	.....	13.25
Turpentine (bbl. lots), N. Y., per gal.	.....	\$0.635

Northwestern Pacific to Improve

Northwestern Pacific Railroad, San Francisco, Cal., has been ordered by the California Railroad Commission to undertake immediately, and to carry out to consummation with all reasonable diligence and expedition a program of improvements of its service and facilities. The decision is the result of extensive hearings conducted by Commissioner Leon O. Whitsell, and embodies the program of improvements proposed by the engineering department of the commission, and agreed to in the main by the defendant corporation during the progress of the hearings.

In the program of improvements, the railroad was ordered to construct, in accordance with plans to be approved by the Commission, new stations at Union Station, B Street Station and West End Station, San Rafael, Marin County, Ukiah, Mendocino County, and Healdsburg, Sonoma County and reconstruct or improve, in accordance with plans to be approved by the Commission, its stations at Sausalito, Tiburon, Mill Valley and Ross, as well as maintain a reasonably high standard at other stations on its line. It is to construct, in accordance with plans to be approved by the Commission, shelter stations on the west side of the track at Almonte, Baltimore Park and Kentfield and to file with the Commission, for its approval, within three months from the date of the order, a plan providing for the elimination of the hazard of third rail operation on Second Street, San Rafael, and upon the approval of the Commission the company shall have such plan put into effect as expeditiously as possible. The third rail is to be protected with a covering at all stations and throughout the entire territory traversed by the line, except that if the company so elects, such third rail covering may be omitted in marsh territory on that portion of the line between Pine Street, Sausalito, and Almonte and between Almonte and west end of Corta Madera Tunnel, between Baltimore Park and Green Brae and between California Park and San Rafael, except at station grounds. Protective covering for third rail contact shoes and other exposed energized surfaces on all interurban equipment is also to be made. The company must submit for the

Commission's approval, within three months from the date of the order, a plan of improving the service on its San Geronimo Valley line and proceed to carry out all the recommendations with respect to improving grade crossings. It is ordered to carry out all the recommendations with respect to correcting impaired clearances and unsafe conditions in tunnels and on bridges, to proceed to improve the power situation on its lines substantially in accordance with the recommendations in the Commission's exhibit No. 2 and to submit, for the Commission's approval, a plan of renewing equipment and to promptly proceed to purchase and place in operation five new motor cars and five new trailer cars, of a detail design to be submitted to the Commission for approval within three months.

ROLLING STOCK

NEWBURGH PUBLIC SERVICE CORPORATION, Newburgh, N. Y., successor to the Orange County Traction Company, lost all but one of its fleet of 21 buses on March 30 in a fire which destroyed its garage and contents. It is understood that an order is being placed for fifteen buses to replace this equipment.

WASHINGTON RAILWAY & ELECTRIC COMPANY, Washington, D. C., has received four new double-end one-man cars from the J. G. Brill Company. These cars are the first of an order of twelve, at a total cost of \$160,000.

TRACK AND LINE

TRENTON & MERCER COUNTY TRACTION CORPORATION, Trenton, N. J., will erect a new railroad crossing at State and Canal Streets.

SPRINGFIELD STREET RAILWAY, Springfield, Mass., is preparing for rehabilitation work from Holly Street to Oak Street, Indian Orchard, at a cost of approximately \$17,000; special work at the corner of Main and Oak Streets, Indian Orchard, at a cost of about \$6,000; and on White Street from Orange Street to Sumner Avenue at a cost of approximately \$19,000.

TRADE NOTES

STANDARD AUTOMATIC SIGNAL CORPORATION, Chicago, Ill., has appointed Frank J. Lepreau as sales manager. Mr. Lepreau was formerly Chicago representative of the L. S. Brach Manufacturing Company, Newark, N. J.

IDEAL COMMUTATOR DRESSER COMPANY, Sycamore, Ill., has appointed Syracuse Supply Company, Syracuse, N. Y., as exclusive sales representative in the Syracuse territory.

W. P. BROWN & SONS LUMBER COMPANY, Louisville, Ky., has moved its crosscutting department to Fourth and K Streets, Louisville.



Positive—

“Peacock” Staffless Brakes are always *positive*. No matter how much chain comes in, they’ll wind it up and set the brakes with all the power necessary.

There will be no alarmed passengers or frightened, helpless motorman, when the unexpected emergency is encountered, if cars are equipped with the “Peacock” Staffless.

Don’t trust your passengers’ safety to inferior handbrakes. Specify “Peacock” Staffless and be positive there will be no inroads on accident reserves on that score.



The
“Peacock”
Staffless

National Brake Co., Inc.

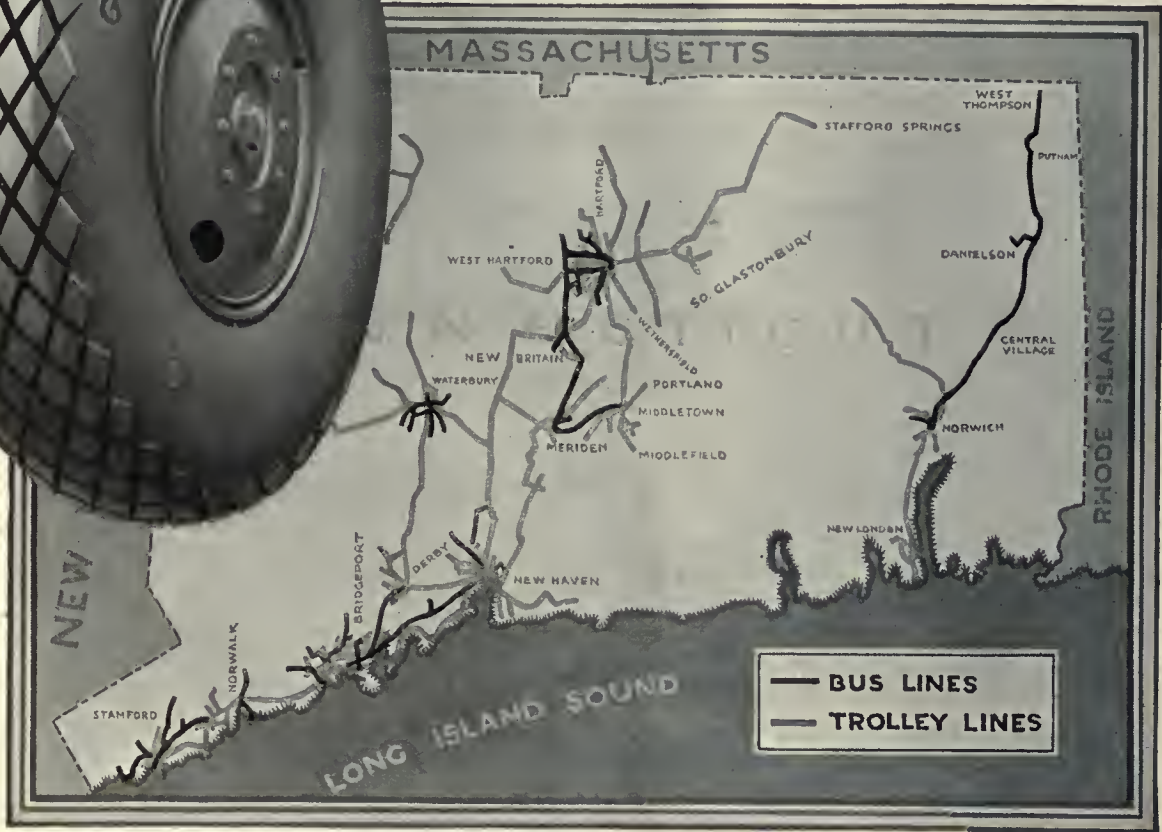
890 Ellicott Sq., Buffalo, N. Y.

Canadian Representative

Lyman Tube & Supply Company, Limited, Montreal, Canada



Thousands of low-cost miles on Goodyears



Map showing the bus routes and trolley connections of The Connecticut Company; inset photograph of a Goodyear Pneumatic Cord Bus Tire

THE reason Goodyear Pneumatic Cord Tires are so greatly preferred in motorbus service the country over is found in Goodyear tire construction.

First there is the All-Weather Tread. The sharp, thick, diamond shaped blocks of this famous tread cut through snow, slush, mud and slime to solid footing, and they hold that footing securely.

There is powerful traction and there is great security in the All-Weather Tread.

The body of the Goodyear Tire is made of SUPERTWIST, the extra-elastic, extra-durable cord that flexes and recovers resiliently, eliminating shoulder breaks and other causes of blowouts.

There is extra dependability in Goodyear SUPERTWIST construction. There is freedom from trouble. There is uninterrupted, low-cost, revenue mileage. There is an easy riding quality the passengers appreciate.

* * *

These are the reasons for the 100% Goodyear equipment on such lines as The Connecticut Company.

The 128 motor coaches of this Company average 350,000 miles a month, all on Goodyear Tires.

The records of Goodyears in this service are replete with instances of Goodyear Tires standing up for 22,000 to 28,000 miles.

If you want efficient, economical tire performance for your service, equip with Goodyear.



Why Guess at Bus Profits



Reo busses—proved by millions of miles of use—are built to take the guesswork out of bus operation.

For Reo busses have two outstanding advantages—Greater Mileage Output and Low Maintenance Cost.

The 6-cylinder power and 4-wheel brakes of Reo busses will give you more miles per working day—as much as 23% more miles, to cite only one instance.

Amazing figures—available on request—show that Reo busses cost you less to maintain and that their depreciation is remarkably small.

Constant improvement and a multitude of new mechanical features make Reo busses a safer investment for the bus line operator who wants to know where he is going. Try one out today.

REO MOTOR CAR COMPANY, *Lansing, Michigan*

12
AND
21
PASSENGER

REO BUSES



EFFICIENCY and ECONOMY all along the line

From Coast to Coast the operators of the largest bus fleets are standardizing on Firestone Gum-Dipped Tires.

Why are these leading bus operators obtaining greater operating efficiency and lower tire costs? This is not only a matter of better tire equipment, especially engineered by Firestone for bus requirements—but it carries definite assurance of a most complete service program organized at convenient points by Firestone factory trained men. Firestone pioneered in the development of the motor bus industry.

Firestone co-operated from the start with leading operators and manufacturers.

Firestone leadership in bus tire design *plus* this broad experience in service is helping hundreds of bus lines to keep abreast of traffic demands, maintain on-the-minute schedules and show constantly decreasing cost-per-tire-mile. Your local Firestone Dealer will gladly explain to you the Firestone Bus Tire Proposal of Service. Call on him today, or write to the Home Office at Akron.

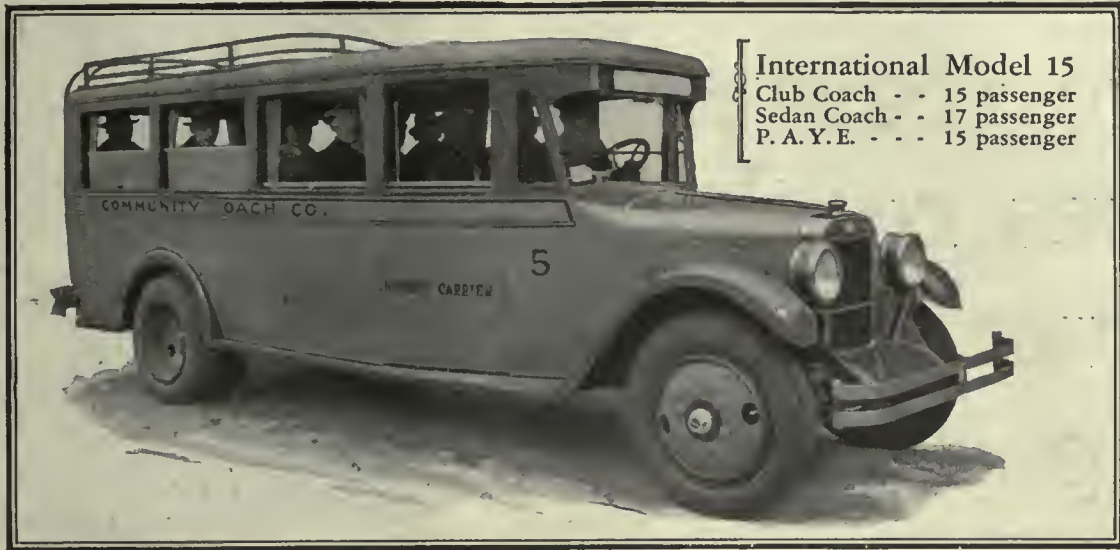
MOST MILES PER DOLLAR

Firestone

GUM-DIPPED TIRES

AMERICANS SHOULD PRODUCE THEIR OWN RUBBER...

Harvey S. Firestone



International Model 15
 Club Coach - - 15 passenger
 Sedan Coach - - 17 passenger
 P. A. Y. E. - - - 15 passenger

International Harvester *Six-Cylinder* COACHES

THE International line of motor coaches fits the practical requirements of every community.

Backed by long experience, these modern coaches are unexcelled in mechanical design, beauty, and comfort; unequalled in safety, and in service facilities. Coach traffic men know this. They know that International Coaches are a profitable investment. Experience has shown them that when an International is put on the job it stays on the job—and does the work so well that vehicle problems and operating costs are settled for years. No wonder you see so many International



Beauty and perfection of body appointment, and merit in design and mechanical detail have built a high reputation for International Motor Coaches.

Coaches wherever you go!

Careful study and understanding of coach route requirements has resulted in the development of the Model 15, which has won the esteem of coach operators everywhere. This 6-cylinder

coach is available in three styles—Street Car Type, Club Coach, and Sedan; generously built to carry 15 or 17 persons—the practical capacity. Our new catalog will acquaint you with the many exclusive refinements offered by International Harvester *Six-Cylinder* Coaches. Copies are available by writing us direct.

The International Harvester automotive line also includes the 3/4-ton Special Delivery Truck, Speed Trucks of 1 1/4, 1 1/2, and 2-ton, Heavy-Duty Trucks up to 5-ton, and McCormick-Deering Industrial Tractors. Service is "always around the corner." There are 160 company-owned branches in the United States and Canada.

INTERNATIONAL HARVESTER COMPANY

606 So. Michigan Ave.

of AMERICA
 (Incorporated)

Chicago, Illinois

This New fare register gives results never before possible



The New National Fare Register

It protects receipts. The printed ticket and public indication make the passenger an inspector of every fare recorded. Ticket shows zone from and to, amount and kind of fare, date, operator's number and consecutive number.

It prevents over-riding. Passengers cannot over-ride without paying additional fare, because the printed ticket immediately shows the operator if they have exceeded the distance paid for.

It speeds up service. A fast, positive action keyboard, electric operation, and repeat key, keep passengers moving quickly at loading time.

It reduces auditing. The printed trip-sheet inside the register gives the auditing department a complete printed record of every fare, showing zone from and to, amount, operator's number and kind of fare. Total shows amount of all cash fares collected.

These results have been proved in actual operation on interurban lines over a considerable period of time. Our nearest representative or our factory at Dayton will give complete information on this new register.

Advantages of National Fare Registers

Fast in operation

Printed Trip-sheet giving record of every fare

Legible ticket of convenient size on good stock

Total of all cash fares collected

Classification of fares

Public indication

Fast, positive action keyboard

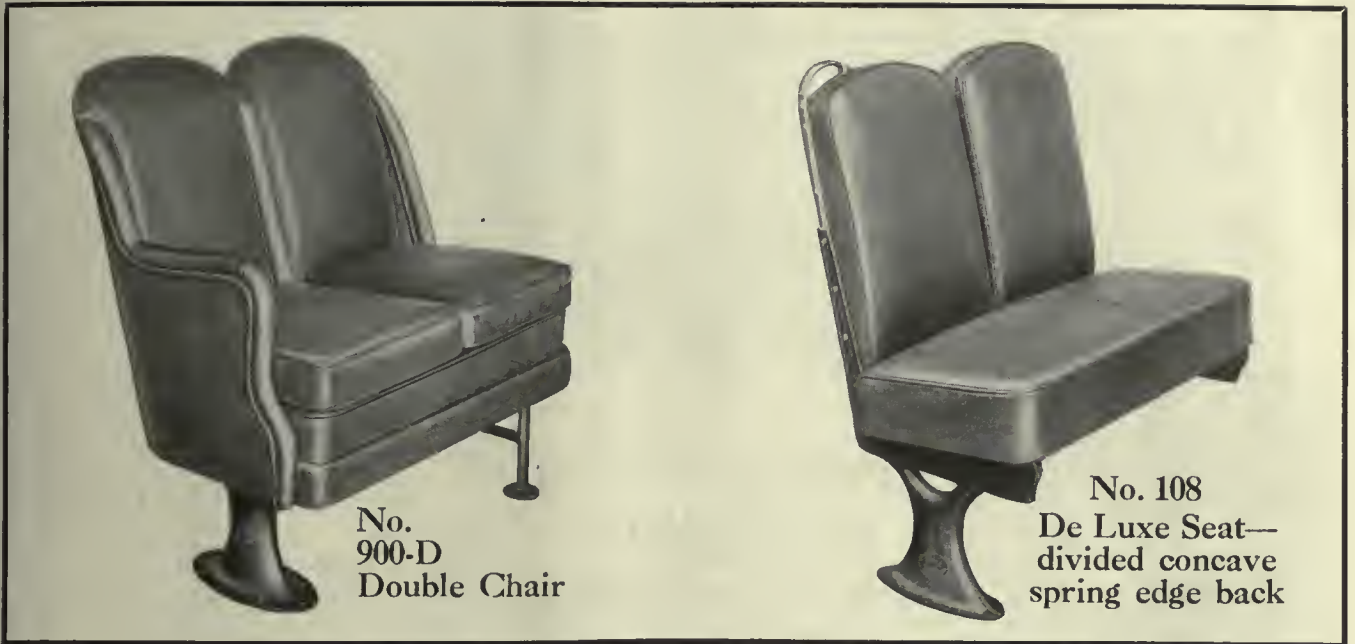
Repeat key for repeat fares

Small and compact

Electrically operated

National Fare Registers

The National Cash Register Company
Dayton, Ohio



No. 900-D
Double Chair

No. 108
De Luxe Seat—
divided concave
spring edge back

*Public Service
says "Hale & Kilburn"*

and backs it up with Hale & Kilburn Seats for 331 New Buses!

This large order is evidence of faith expressed by the Public Service Company of New Jersey in the quality and service of Hale & Kilburn Seats.

The experience gained through equipping steam and electric railways over a long period of years with many types of seats proves extremely valuable in outfitting the thousands of buses now supplementing railway lines.

Public Service indorses the judgment of operators who have found in Hale & Kilburn Seats the very highest standards of design, comfort, appearance and reliability.

No. 900-D for 75 Intercity Coaches

A double chair of extreme comfort, used for the 75 fast Intercity Buses. Spring Edge Base Cushion. Individual Air Spring Top Pads. Soft Spring Back.

No. 108 De Luxe for 256 City Buses

Providing unusual comfort and beauty for the 256 buses to be used in city service.

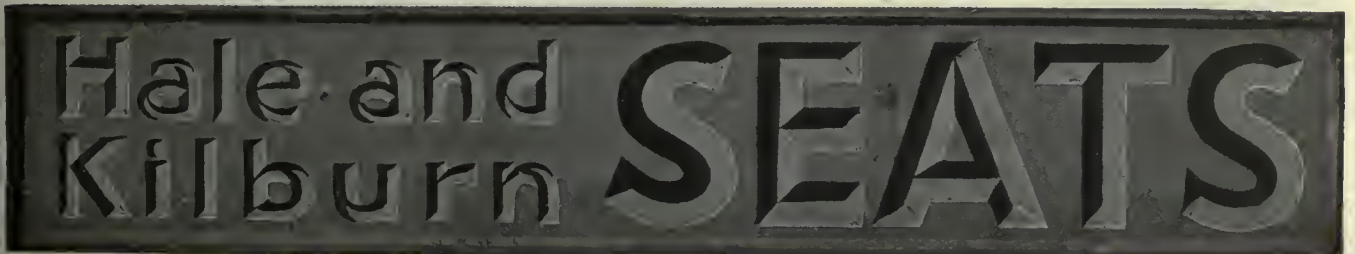
HALE & KILBURN COMPANY

General Offices and Works: 1800 Lehigh Avenue, Philadelphia

SALES OFFICES:

Hale & Kilburn Co., Graybar Bldg., New York
Hale & Kilburn Co., McCormick Bldg., Chicago
E. A. Thornwell, Candler Bldg., Atlanta
Frank F. Bodler, 903 Monadnock Bldg., San Francisco

T. C. Coleman & Son, Starks Bldg., Louisville
W. L. Jefferies, Jr., Mutual Bldg., Richmond
W. D. Jenkins, Praetorian Bldg., Dallas, Texas
H. M. Euler, 146 N. Sixth St., Portland, Oregon
C. S. Wright Co., 66 Temperance St., Toronto, Ont., Canada



*Where Selection is
decided by
Performance*

**"NATIONAL" TUBULAR
STEEL POLES**
Predominate

EXPERIENCE has taught many valuable lessons in the selection of poles for trolley lines, electric lighting, telephone, telegraph, and signal systems. Perhaps the lessons of greatest value are those which resulted in the policy of choosing poles for long life, reliability, and especially, for safety. The recognized safety (dependability) of "NATIONAL" Tubular Steel Poles is a consideration of first and ultimate importance, as evidenced by the extensive use of "NATIONAL" Poles throughout America.

Wherever the factors of safety, strength and appearance dominate, it will pay you to specify "NATIONAL" Poles. Made by the largest manufacturer of wrought tubular products in the world, with facilities for meeting a wide range of specifications in pole construction. Ask for Bulletin No. 14.



NATIONAL

NATIONAL TUBE COMPANY
Frick Building, Pittsburgh, Pa.





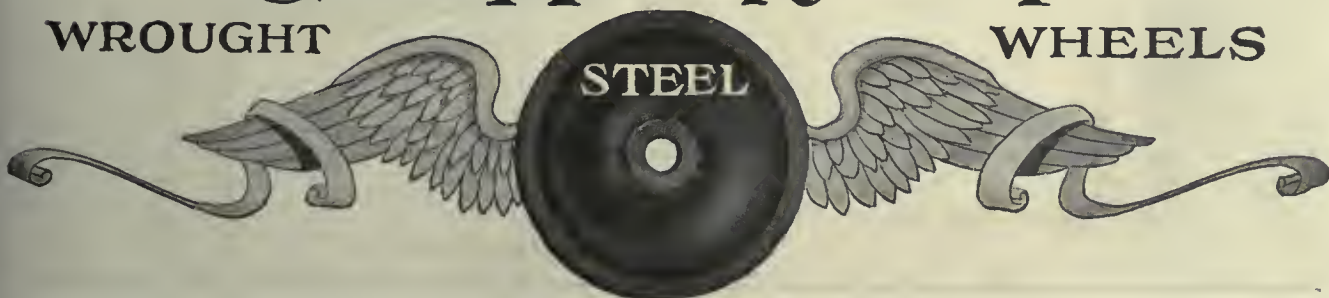
**Here We ROLL IN
The Mileage Gary Wheels ROLL OUT**

WROUGHT STEEL WHEELS are doubly efficient wheels because they combine the advantages of rolling with those of forging. A ten-thousand-ton hydraulic press forges out defects; a remarkably efficient rolling mill rolls in multiplied mileage. In the rolling operation seven powerful rolls act in unison on the rim and web. As the wheel block revolves, a portion of the metal is forced from the web into the rim; tread and flange are formed to proper contour; the width of the rim is accurately controlled while its structure undergoes a refining process that reflects itself in long, steady and low-cost mileage

The co-operation of Gary wheel engineers is at your service.

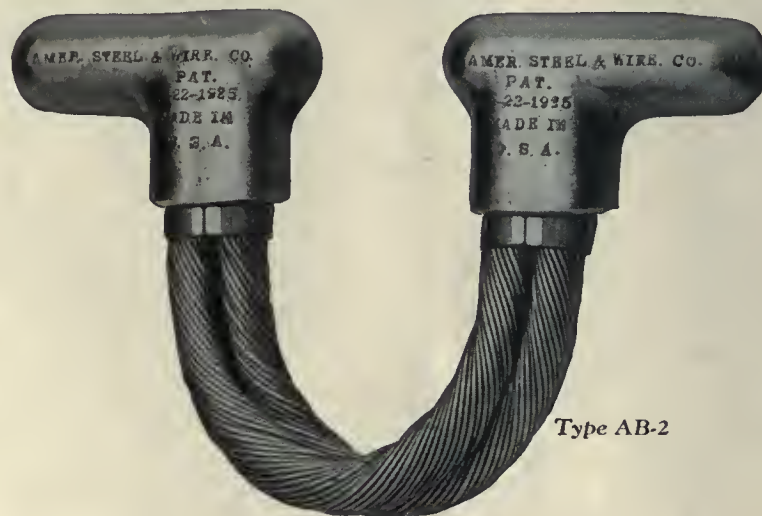
Illinois Steel Company
General Offices: 208 South La Salle Street
Chicago, Illinois

G A R Y
WROUGHT STEEL WHEELS



American Steel and Wire Company's

Arcweld Rail Bonds



Type AB-2

SINCE their introduction in 1919, Arcweld Rail Bonds have been steadily gaining the favor and approval of electric traction companies.

This bond is designed and constructed with the necessary strength to withstand hard usage, and to give long, satisfactory service.

The new design of terminal of the AB-2 bond provides an easy welding angle. It contacts with the rail along a thin line, thereby making it possible to place the bond low on the rail head.

We will gladly furnish samples of this bond upon request.



Type AB-2
applied

SALES OFFICES

Chicago
New York
Boston

Atlanta
Birmingham
Cleveland

*San Francisco

Worcester
Philadelphia
Pittsburgh

*Los Angeles

Buffalo
Detroit
Cincinnati

*Portland

Baltimore
Wilkes-Barre
St. Louis

*Seattle

Kansas City
Minneapolis-
St. Paul

*United States Steel Products Co.

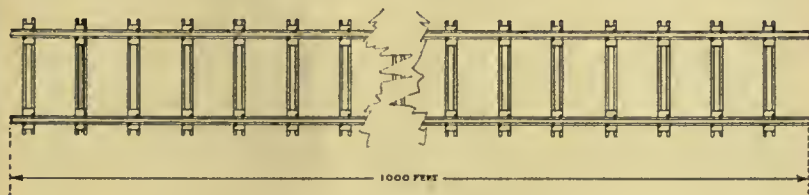
Oklahoma City
Memphis
Dallas

Denver
Salt Lake City

EIGHT MEN



LAI D 1000 FEET



of
DAYTON
TIE TRACK
IN ONE DAY



Eight Men Laid 1000 Feet Of Dayton Tie Track In One Day

Record of an actual case, with regular workers such as you have in your track crew.

Production like this means low track costs. Low track costs mean you can replace more track—make needed extensions more rapidly than anticipated.

The answer to the low cost is the ease and speed of handling Dayton Ties.

Dayton Track is always Smooth

THE DAYTON
MECHANICAL TIE CO.
DAYTON, OHIO



58 Plants—Daily Capacities 20,000 Wheels

1,000,000,000,000 Ton Miles in 1927

Ninety five percent of all freight cars plus a large percentage of steam and electric passenger cars are equipped with Chilled Tread Wheels. Conservative estimate places last year's loads carried on Chilled Tread Wheels in the United States and Canada at one trillion gross ton miles.

Do You Need These Facts?

The following are a few of the subject headings:

The Chilled Tread Wheel

- Safety
- Bearing Power
- Wearing Value
- Rail Abrasion
- Rail Resistance
- Brake Shoe Friction
- Friction and Wear Table
- Scrap Value
- Minimum Machining
- Easily Procurable
- Guarantee

Standard Specifications

- Material
- Chemical Requirements
- Dimensions, Weight, Design
- Inspection

A.S.T.M. Specifications

- A.R.A. Specifications
- A.M.C.C.W. Specifications for Car and Locomotive

A.M.C.C.W. Specifications for Industrial Use

- A.R.A. Wheels, Mounting
- Truck Standards
- A.R.A. Specifications for Axles, Carbon Steel
- A.R.A. Axle Dimensions, Limits of Wear, Capacities
- Industrial Wheels
- Wheel Shop Practice (A.R.A.)
- A.M.C.C.W. Laboratory Equipment

Handy Reference Tables.

Write for the New

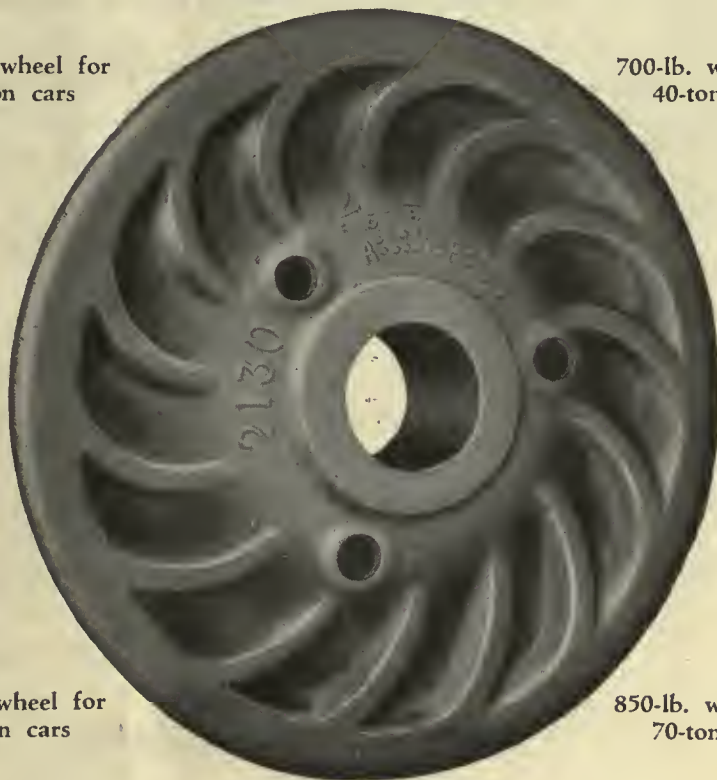
104 Page Book

"The Chilled
Tread Wheel"

This book will be sent with the compliments of the Association to anyone who has use for the information it contains.

650-lb. wheel for
30-ton cars

700-lb. wheel for
40-ton cars



750-lb. wheel for
50-ton cars

850-lb. wheel for
70-ton cars

SINGLE PLATE WHEELS

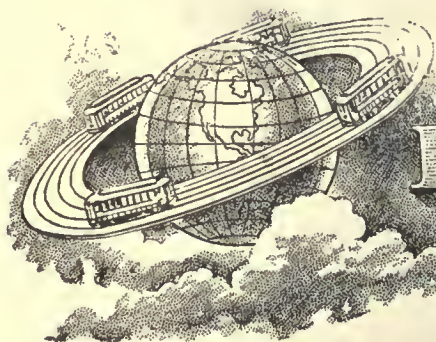
Have you investigated the advantages of this new design? Over 206,000 in service.

Chilled Tread Wheels



ASSOCIATION OF MANUFACTURERS OF CHILLED CAR WHEELS
1847 McCORMICK BUILDING, CHICAGO

JUST as the electric railway companies have to compile and be guided by exhaustive statistics as to peak loads, traffic densities, costs per mile, and so forth, we must constantly keep ourselves informed as to purchasing power, density of population and all vital market information in order to maintain our service as an active asset of your service.



Barron G. Collier

INCORPORATED

CANDLER BLDG. NEW YORK

An unusual steel tie installation in San Antonio

The San Antonio Public Service Company has recently completed double tracking in concrete and paving its track area on Guadalupe Street, from Pecos to Brazos Street. The regular service over the line was maintained without interruption during the entire period of construction.

The tracks on this street cross the switching yards of the Missouri Pacific Railway, where there are eight railway tracks in a distance of 350 ft. and where it was decided to use single track only. In these short stretches of track between railway crossings, every other wood tie was removed and in its place a concrete tie was cast in the following manner: A Carnegie Steel Tie, M-24, was used as the core. The bolts were placed in the bolt holes and welded to the tie. The tie was then placed in position and blocked up under the rail. Steel reinforcing wire was placed around the tie and spot welded in several places to the top surface. A form was then built around the tie and a 1:2:4 concrete poured. This made the tie when completed 8 in. by 10 in. by 7 ft. long.

The concrete was kept damp by sprinkling for fifteen days, when the forms were removed. The regular tie clips were then applied and the



nuts tightened down on the bolts and the ties tamped up with air tampers. The alternate wood ties were then removed and the remaining concrete ties installed as before.

There was no difficulty experienced in surfacing and lining this track, it being as easy to handle as ordinary wood tie track. By the installation of the concrete ties, and by applying an asphalt wearing surface, it was possible to show a considerable savings in first cost, as only one-half the original quantity of concrete was used. The company feels this, or a similar type of construction, is very desirable in close proximity to steam railway crossings which require tamping up occasionally.

Carnegie Steel Cross Ties insure a comfortable-riding, repair-free track. Their cost per mile per year is lower than that for wood ties.

CARNEGIE STEEL COMPANY

General Offices: Carnegie Building
PITTSBURGH, PENNA.

—and the band played

"There'll be a hot time in

NOTE: This advertisement also appears in other McGraw-Hill Publications, Advertising and Selling, The Magazine of Business, Factory and Industrial Management, N. Y. Times and N. Y. Herald Tribune.

TWO years ago one night in June fifty thousand friendly voices broke into cheer after cheer as a mammoth bonfire of old Grand Rapids street cars climaxed the celebration that began a few days previously. The whole city declared holiday to witness a gala parade of new cars that replaced those consumed in the flames. The opposition of press, city officials and public had been transformed into enthusiasm, confidence and co-operation with the local railway.

Refused to Take the Count

Grand Rapids is only one of many examples of the come-back that is being staged by the electric railway industry. Atlanta, Pittsburgh, Chicago, Cincinnati, Cleveland, Richmond, Ft. Worth, Youngstown, Boston, Kansas City, Toronto, Houston and numerous other cities and localities have also made noteworthy progress. The industry hardest hit by the war and post-war turmoil is on the mend.

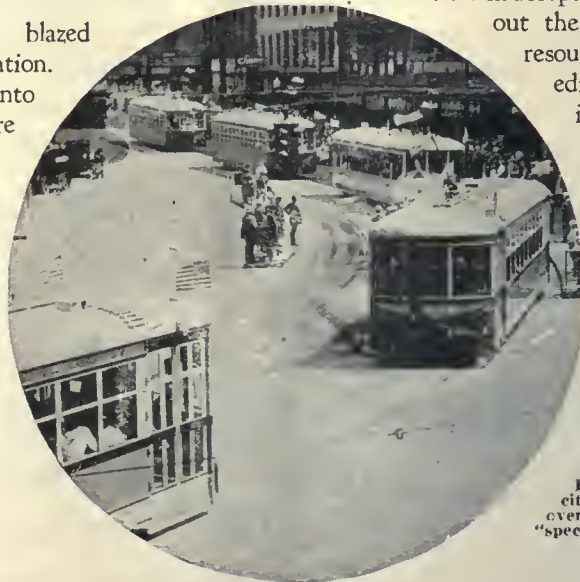
The come-back trail was blazed by a McGraw-Hill publication. While politicians rode into office on the 5-cent fare issue, when the automobile and the jitney ate into street railway revenue, when miracles in economies failed to stem the ebbing tide of income, but only made the car ride less attractive—in those seem-

ingly hopeless days *Electric Railway Journal* never for a moment lost its confidence in the basic soundness of the local transportation industry. It devoted every resource at its command to inspiring local transportation companies to fight their way out of the wilderness.

Business Journalism in Action

Electric Railway Journal maintained that the solution lay in two directions: First, in modernizing equipment and improving service so as to make the car ride attractive; second, in developing the bus as a de luxe service and co-ordinating it with existing rail service. By thus satisfying the demand for comfort, speed and faster schedule, *Electric Railway Journal* contended that patronage could be won, labor and public relations improved, and fare and other franchise difficulties relieved.

To win acceptance of this program throughout the industry, every publishing resource was used—news articles, editorials and research, meetings and personal conferences with operators, associations, manufacturers and bankers. *Electric Railway Journal* showed that modern equipment would quickly pay for itself in operating economies. Later car and equipment



NEW CARS FOR OLD — Grand Rapids, June 13, 1926, when the city's populace turned out to look over new street cars that were built on "specifications by the public."

“The old town tonight”



builders and other agencies took active part in the campaign. Their industrial advertising was effectively teamed with the editorial program. Finally operating companies began adopting the new methods; the rift in the clouds appeared.

This modernization campaign won for *Electric Railway Journal* the 1927 award for the most outstanding editorial service by a business paper to its industry. The award was given by Associated Business Papers, Inc., a non-profit organization of the leading business papers, whose purpose is to stimulate achievement in business journalism.

An Every-Day Editorial Job

In the same purposeful way, each McGraw-Hill publication works in its field for better conditions, better production methods, better products, better marketing. *American Machinist* campaigns for modern machine tool equipment in the metal-working

industries; *Engineering News-Record* for year-round construction work; *Coal Age* for mechanization of the mines; and so on. Receptive markets are a natural by-product of such editing. It dredges the advertising channel to those markets.

The readers of McGraw-Hill publications are the decision men of Industry, the men who must keep in touch with developments vital to their progress. Because each industry needs and reads its McGraw-Hill publication, there is created a direct avenue of approach to the responsible men of industry. Thus through industrial advertising in these publications, waste is eliminated and results increased.

How to make better use of such business papers is shown by one of McGraw-Hill's researches, "Industrial Marketing at Work." Manufacturers selling to industry, their advertising agents and their bankers are welcome to a copy by addressing the nearest office listed below.

McGraw-Hill Publications

McGraw-Hill Publishing Company, Inc.

New York Chicago Cleveland Philadelphia St. Louis San Francisco London



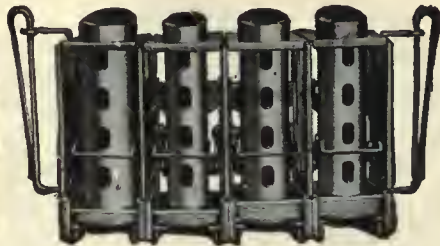
JOHNSON FARE COLLECTING SYSTEMS



Johnson Electric Fare Boxes and overhead registers make possible the instantaneous registering and counting of every fare. Revenues are increased 1½ to 5% and the efficiency of one-man operation is materially increased. Over 4000 already in use.

When more than two coins are used as fare, the Type D Johnson Fare Box is the best manually operated registration system. Over 50,000 in use.

Johnson Change-Makers are designed to function with odd fare and metal tickets selling at fractional rates. It is possible to use each barrel separately or in groups to meet local conditions. Each barrel can be adjusted to eject from one to five coins or one to six tickets.



Johnson Fare Box Co.

4619 Ravenswood Ave., Chicago, Ill.

ELECTRICAL INSULATION

MICANITE and **EMPIRE**
INSULATOR
REG. U.S. PAT. OFF.

Micanite and Super-Micanite
Sheets, Commutator Segments, and
Commutator Rings

Micanite Tubes and Washers

Linotape, Seamless or Sewn Bias
(Yellow or Black Varnished Tapes)

Empire Oiled Cloths and Papers
(Yellow or Black)

Compounds, Varnishes, Etc.

Send for catalog and helpful booklet on Commutator
Insulation and Assembly

MICA INSULATOR COMPANY

Largest manufacturers in the world of mica insulation.
Established 1893.

New York: 200 Varick St. Chicago: 542 So. Dearborn St.
Cleveland Pittsburgh Cincinnati
San Francisco Toronto Los Angeles Seattle
Works: Schenectady, New York. London, England

PANTASOTE

TRADE MARK

—the car curtain and upholstery material that
pays back its cost by many added years of
service. Since 1897 there has been no substitute
for Pantasote.

AGASOTE

TRADE MARK

—the only panel board made in one piece. It is
homogeneous and waterproof. Will not separate,
warp or blister.

Standard
for electric railway cars
and motor buses



Samples and full
information gladly
furnished.



The PANTASOTE COMPANY, Inc.
250 Park Avenue, NEW YORK



Complete satisfaction

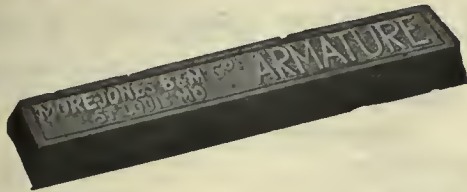
Operating perfectly and requiring
minimum attention for maintenance
and lubrication, Earll Catchers and
Retrievers give genuinely satisfactory
results. Their refinement of design,
and mechanical superiority are sum-
marized in the following five features,
peculiar to Earll construction.

- No-wear Check Pawl
- Free-Winding Tension Spring
- Ratchet Wind
- Emergency Release
- Perfect Automatic Lubrication

Earll Catchers and Retrievers
C. I. EARLL, York, Pa.

Canadian Agents:
Railway & Power Engineering Corp., Ltd., Toronto, Ont.
In All Other Foreign Countries:
International General Electric Co., Schenectady, N. Y.

M-J Armature Babbitt



No less than twenty-five different grades of Babbitt have been successfully perfected in the More-Jones line, designed for various services and at varying prices. "Armature" for electric railways is the recognized standard. *Let us quote you.*

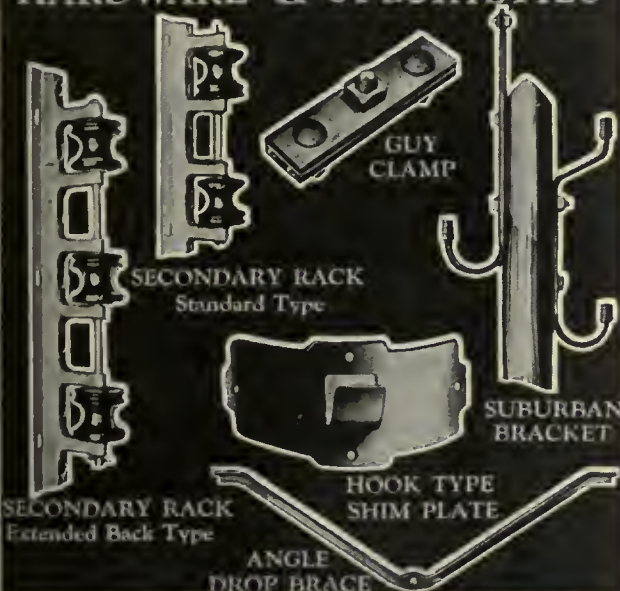
National Bearing Metals Corporation

New York, N. Y. St. Louis, Mo. Pittsburgh, Pa.
 Jersey City, N. J. Portsmouth, Va. Meadville, Pa.

**"MORE-JONES
 QUALITY PRODUCTS"**

TRUSCON

POLE LINE
 HARDWARE & SPECIALTIES



Write for Catalog and Price List
 TRUSCON STEEL COMPANY ... YOUNGSTOWN, OHIO
 Established 1903
 Warehouses and Offices in all Principal Cities



TOULOUMBAJIS

In certain sections of Constantinople the touloumbajis, or irregular firemen, run to a fire with a simple pump mounted in a packing box.

Arriving on the scene they start to haggle with the owner of the building on a price to save either the house or the furniture.

In other words, their first interest is to see how much money they can get out of the emergency.

Thank goodness that element has been largely eliminated from carbon brush application.

Fact is since the widespread adoption of the Morganite method of selling brushes on engineering prescription, emergencies don't arise.

Morganite Brush Co., Inc.

Main Office and Factory
 3302-3320 Anable Ave., Long Island City, N. Y.

DISTRICT ENGINEERS AND AGENTS

- Pittsburgh, Electrical Engineering & Mfg. Co., 909 Penn. Ave.
- Cincinnati, Electrical Engineering & Mfg. Co., 607 Mercantile Library Building.
- Cleveland, Electrical Engineering & Mfg. Co., 320 Union Building.
- Baltimore, O. T. Hall, Sales Engineer, 432 North Calvert St.
- Revere, Mass., J. F. Drummey, 75 Pleasant Street.
- Los Angeles, Electrical Engineering Sales Co., 502 Delta Building.
- San Francisco, Electrical Engineering Sales Co., 222 Underwood Bldg.
- Toronto, Can., Railway & Power Engineering Corp., Ltd., 133 Eastern Ave.
- Montreal, Can., Railway & Power Engineering Corp., Ltd., 68-70 St. Antoine St.
- Winnipeg, Can., Railway & Power Engineering Corp., Ltd., P. O. Box 325.

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

Design and Construction
Examinations Reports Appraisals
Industrial and Public Service Properties

NEW YORK BOSTON CHICAGO

THE BEELER ORGANIZATION

Transportation, Traffic, Operating Surveys
Better Service—Financial Reports
Appraisals—Management

52 Vanderbilt Ave.

New York

SANDERSON & PORTER

ENGINEERS

PUBLIC UTILITIES & INDUSTRIALS

Design Examinations Construction Reports Valuations Management

CHICAGO NEW YORK SAN FRANCISCO

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Engineer—2301 Connecticut Ave., N.W., Washington, D. C.

TRANSPORTATION SURVEYS

Organized Traffic Relief and Transit Development
Co-ordinating Motor Transport, Railroad and City
Plans, Service, Routing, Valuation, Economic Studies

EXPERIENCE IN 20 CITIES

ALBERT S. RICHEY

ELECTRIC RAILWAY ENGINEER

WORCESTER, MASSACHUSETTS

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683 Atlantic Ave., BOSTON, MASS.

A. L. DRUM & COMPANY

Consulting and Constructing Engineers

VALUATION AND FINANCIAL REPORTS
RATE STUDIES FOR PRESENTATION TO PUBLIC SERVICE
COMMISSIONS
CONSTRUCTION AND MANAGEMENT OF
ELECTRIC RAILWAYS

230 South Clark Street, Chicago, Ill.

DAY & ZIMMERMANN, INC.

ENGINEERS

DESIGN - CONSTRUCTION - REPORTS
VALUATIONS - MANAGEMENT

NEW YORK

PHILADELPHIA

CHICAGO

C. B. BUCHANAN President W. H. PRICE, JR. Sec'y-Treas. JOHN F. LAYNG Vice-President

BUCHANAN & LAYNG CORPORATION

Engineering and Management, Construction
Financial Reports, Traffic Surveys
and Equipment Maintenance

BALTIMORE
1004 Citizens National
Bank Bldg.

Phone:
Hanover: 2142

NEW YORK
49 Wall Street

STEVENS & WOOD

INCORPORATED

ENGINEERS AND CONSTRUCTORS

120 BROADWAY, NEW YORK

ENGINEERING
CONSTRUCTION

YOUNGSTOWN, O.
CHICAGO, ILL.

FINANCING
MANAGEMENT

HEMPHILL & WELLS

CONSULTING ENGINEERS

Gardner F. Wells Albert W. Hemphill

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INVESTIGATIONS COVERING

Reorganization Management Operation Construction

43 Cedar Street, New York City

KELKER, DELEUW & CO.

CONSULTING ENGINEERS

REPORTS ON

Operating Problems

Valuations

Traffic Surveys

111 W. Washington Street, Chicago, Ill.

E. H. FAILE & CO.

Designers of

Garages—Service Buildings—Terminals

441 LEXINGTON AVE.

NEW YORK

MCCLELLAN & JUNKERSFELD

Incorporated

ENGINEERING AND CONSTRUCTION

Examinations—Reports—Valuations

Transportation Problems—Power Developments

68 Trinity Place, New York

Chicago

St. Louis

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



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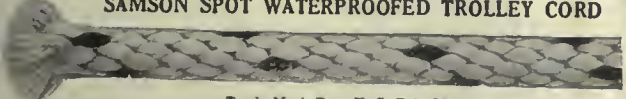
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- Grinders, Portable**
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Railway Track-work Co.
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- Guard Rails, Tee Rail and Manganese**
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- Harps, Trolley**
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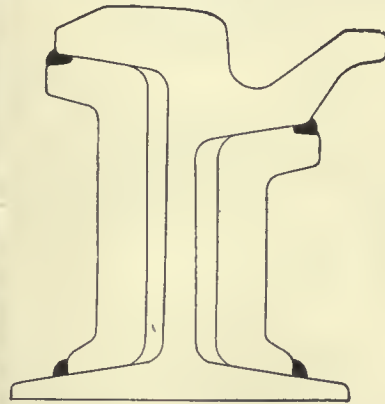
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THE LEAVENWORTH TIMES, FRIDAY EV

LOCAL MEN LOUD IN THEIR PRAISE OF NEW TRAMS

On Trial Trip Declare New Interurban Cars as Easy Riding as Pullman Coach.

"LAST WORD" IN CAR MAKING

Car Builder Describes New Equipment as Best Interurban Rolling Stock Anywhere in Country —In Service Monday

The four new interurban cars delivered several days ago by the American Car company to the Kansas City, Leavenworth & Western will be placed in service Monday, according to present plans. It was announced yesterday by Walter Holman at a luncheon given thirty Leavenworth and Kansas City men at the Kansas City club. Leavenworth men who made the trip to Kansas City yesterday as guests of the officials of the road were loud in their praise of the new cars. The car rolled smoothly over the rails, those making the trip declaring it rode as easily as a Pullman. The special car followed a regular and kept the low schedule with ease.

At Chelsea Junction the train was met by Mr. Holman, a number of other officials. A special was in charge of the trip. Other officials making the trip from Leavenworth were G. W. Hall, secretary of city, Hoar, and roadmaster.

Those making the trip were W. Goss, president, National bank; O. Wolfke, president, Wulfke & Co.; Eugene Lytle, president, Lytle & Co.; the railway company are Henry Oelsman, Homer G. postmaster; J. Lytle clerk; W. Hoar, engineer; and J. To J. Tony Ober...

Following an excellent trip there was quite a bit of speech making and throughout there were notes of optimism for the future of electric transportation.

Mr. Holman in introducing the speakers declared that the new equipment had been purchased because the road had faith in Leavenworth. All that was asked in return was that Leavenworth keep faith with the road.

"I do not pose as a railroad man," said Peter W. Gobel, vice-president, "but I have had quite a bit of experience with railroads and electric. I know that they have cost a lot of money."

Mr. Gobel added that while one gets the property that becomes one can't sell it. He said with the interurban cars. Mr. Gobel called that fact that every year for the last few years interurban being junked, because money could not be made available to continue operation and the owners took the only other course and junked the lines at a loss.

"That sort of proceeding could have been avoided to every interurban operating between cities. But for the...

age to keep them running hope of better times," said Gobel.

"We are going to give the best possible service at the cost possible and we hope people along the line and worth will recognize and give us a reasonable age."

Mr. Gobel said the newness of the line was some cost would be items of freight.

W. S. McLucas, a city banker, who visits Leavenworth on the installing equipment. In two cities, he said.

F. G. Burrell, the Kansas City declared it was "courage" to go and "gentlemen" in purchase. The new electric both "swiftness" and "read."

Col. of the Kansas who do not go by...

Regarding the question of increased business that our passenger business since the operation of the new cars has been increased 12 1/2% or 1/8. Of course, there has been a decrease in operating costs; but am unable at present to state what percentage this amounts to. The main saving, of course, is in the power. These new cars are fifty-two passenger cars, with four 35 horse power motors, and weigh 38,000 pounds apiece. They displace a similar number of sixty passenger cars, with four 75 horse power motors, which weigh 70,000 pounds apiece. The saving in power, I should, place at 40%, that is, it requires only 60% as much power to operate one of the new cars as one of the old cars. There will be a considerable saving in Operators from the use of one-man service and there will be a saving in maintenance expenses.

On the whole, we feel that our investment in new and lighter cars will prove a very profitable one.

Very truly yours,
W. E. Bamhart
Assistant General Manager.

WEB:h

THE J. G. BRILL COMPANY
Philadelphia, Pa.

American Car Co. St. Louis, Mo. G. C. Kuhlman Car Co. Cleveland, Ohio Wason Man'g Co., Springfield, Mass.

KANSAS CITY, LEAVENWORTH & WESTERN RAILWAY CO.
GENERAL OFFICE
KANSAS CITY, KANSAS
January 23rd, 1928.

Mr. F. L. Markham,
American Car Company,
St. Louis, Mo.

Dear Sir:

Referring to the four light weight Interurban cars that we purchased from your company last year, their operation to date has been satisfactory.

We put them in operation December 12th, 1927; but operated them as two-men cars until yesterday, January 32nd, 1928, when we commenced operating them as one-man cars. I think the one-man car operation is going to be entirely satisfactory.

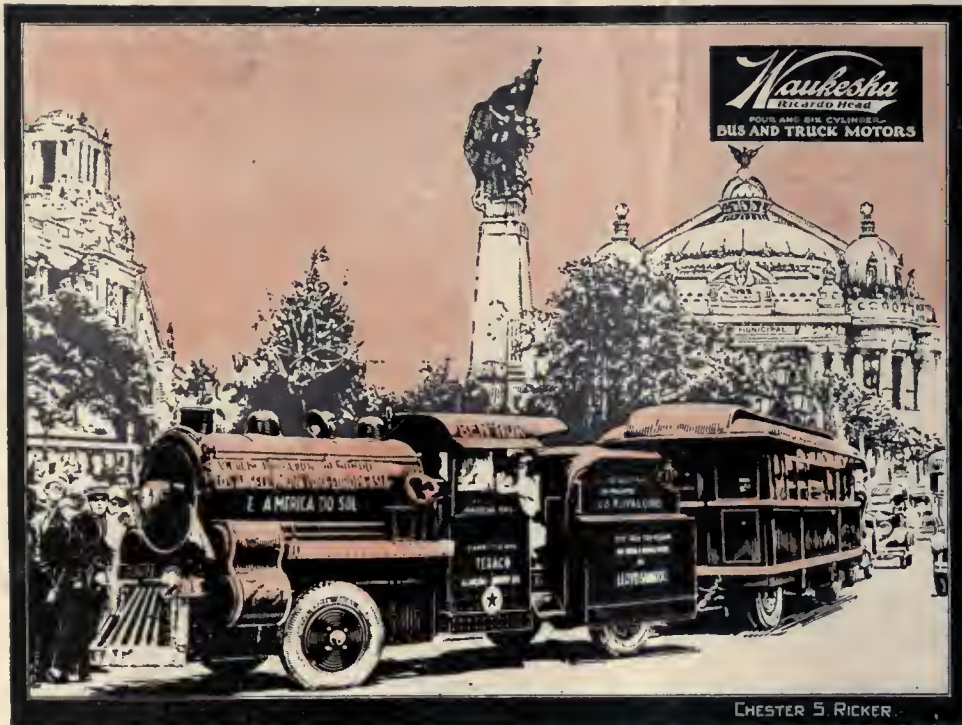
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W. E. Bamhart
Assistant General Manager.



Brill Light Weight Interurban Cars



a-806-LC

Waukesha - Engined Metro - Goldwyn Train in Rio de Janeiro, Brazil

Thru Europe and South America

This 24,000-pound motor train, capable of 45 miles per hour, is pulled by a Waukesha-powered locomotive. Battling all kinds of road and weather conditions, this remarkable train has kept on schedule through England, France, Belgium, Germany and Italy. It is shown here enroute home via the Argentine and Brazil. For over two years the Waukesha engine has operated faithfully and proved equal to its task.

Engine reliability is of paramount importance on a job like this. With bad roads, long distances between supply depots and cities, in foreign countries where there were neither proper tools nor repair parts available for emergencies, it required a most dependable engine. Bred from a line of heavy-duty industrial engines that have a twenty-year heritage of unswerving performance, the success of this train was to be expected. But this same kind of reliability will be found in the Waukesha line of heavy-duty bus and truck engines which are now available in a wide range of powers of both six and four-cylinder types.

A-818-LC

AUTOMOTIVE EQUIPMENT DIVISION

WAUKESHA MOTOR COMPANY
Waukesha Wisconsin
 Eastern Sales Offices Eight W. 40th Street New York City

Exclusive Builders of Heavy Duty Automotive Type Engines for Over Twenty Years