

# ELECTRIC RAILWAY JOURNAL

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MARCH 3, 1928

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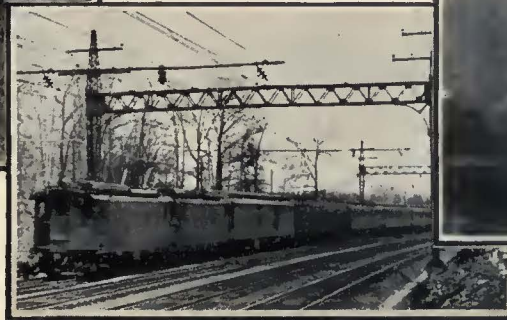
Nineteen Years and not an hour's delay on the Canadian National-Grand Trunk Railways where six 67½ ton Baldwin-Westinghouse locomotives are employed for service in the St. Clair Tunnel.



Operating Costs Reduced 45% on the Virginian Railway



World's Most Powerful Motor-Generator Locomotive Operating on the Great Northern



41 Electrics Reach 51,250,000 Mileage on the New Haven in 20 Years



Twelve Electric Replace 50 Steam Locomotives on the Norfolk & Western

**T**HROUGH electrification of railroads, Westinghouse has made many noteworthy contributions toward the solution of transportation problems. These include the electrification of terminals, yards, and the main and suburban lines of the leading transportation systems in the United States and also those of foreign countries.

Following are a few of the railroads in the United States served by Westinghouse:

- The Pennsylvania Railroad
- The New York, New Haven & Hartford Railroad
- The Long Island Railroad
- The C. M. & St. Paul Railway
- The Erie Railroad
- The Great Northern Railway
- The Virginian Railway
- The Canadian National-Grand-Trunk Railways
- The New York, Westchester & Boston Railway
- The Boston & Maine Railroad
- The Illinois Central
- The Southern Pacific Railroad



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

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# ELECTRIC RAILWAY JOURNAL

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London, England

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No. 9

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## Better Maintenance

COMING!

COMMENTING on American electric railway maintenance methods a German engineer recently remarked "They are wretched. You don't maintain your cars; you repair them. You let the parts wear out and then replace them without giving proper attention to fits or clearances."

Is the German engineer right or wrong? What are some of the bad practices in railway maintenance? What are the views of the manufacturers who furnish the equipment?

With these questions in mind the JOURNAL laid plans for this year's Annual Maintenance Number. It asked the manufacturers to discuss some of the railway maintenance practices which come under their observation.

Frankness is the keynote of these articles. Uncovering bad practices is the first step toward improvement. Every electric railway maintenance man and executive will find food for thought in this year's Annual Maintenance Number. The date is March 17. Watch for it!

### McGRAW-HILL PUBLISHING COMPANY, INC.

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Electrical West  
(Published in San Francisco)  
American Machinist—European Edition  
(Published in London)

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BETTER RAIL, BETTER TRANSPORTATION

---

# A soft answer turneth away wrath but—

a rough track  
turneth away traffic.

A word to the wise  
is unnecessary.

*Complete details on the complete line  
—get them.*

## **Railway Trackwork Co.**

3132-48 East Thompson Street, Philadelphia

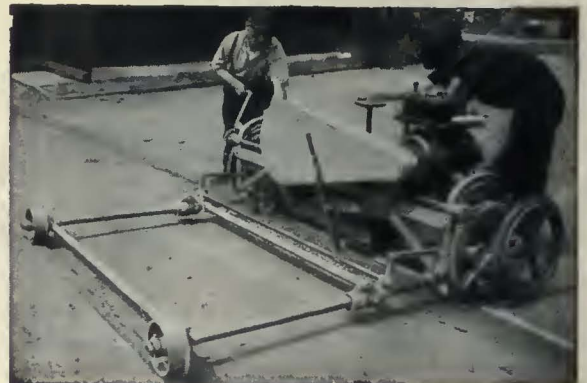
**AGENTS:**

Chester F. Gailor, 30 Church St., New York.  
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Electrical Engineering & Mfg. Co., Pittsburgh  
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Ⓢ 2343



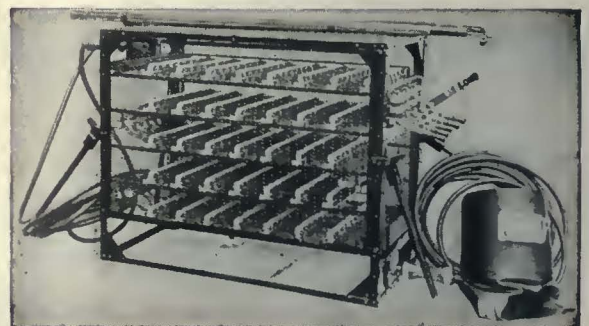
Enreka Radial Rail Grinder



Vulcan Rail Grinder



Reelocating Track Grinder



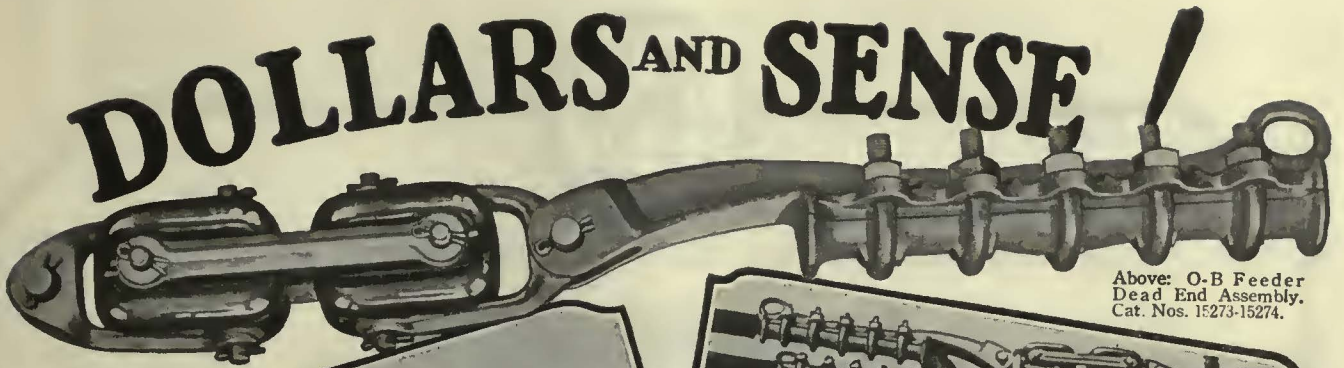
"Ajax" Electric Arc Welder

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BETTER RAIL, BETTER TRANSPORTATION

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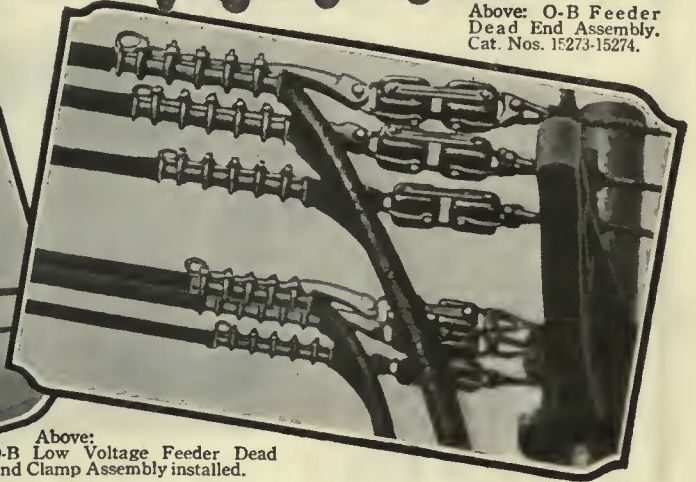
# DOLLARS AND SENSE!



Above: O-B Feeder Dead End Assembly. Cat. Nos. 15273-15274.



Above: O-B Low Voltage Feeder Dead End Clamp Assembly installed.



## New O-B Feeder Clamp Saves Time and Materials Does a Neater, Better Job



Considering that only 1% saved in operating expenses adds nearly 20% to net income, the importance of taking advantage of many possible small savings is readily apparent. O-B Low Voltage Feeder Cable Clamp Assemblies afford another opportunity to cut operating costs.

ONE-THIRD to one-half the usual time is required to dead-end low voltage feeders, and from three to four feet of cable is *saved* on each dead end, with the use of the new O-B Feeder Clamp Assembly.

In addition to these dollars and cents savings in labor and materials—amounting in many cases to \$7.00 for each dead end—the new O-B Feeder Clamp Assembly provides additional insulation. It *also* affords a more durable, trouble-free, and better appearing job.

All need of serving, soldering and taping cables at dead ends is eliminated. Feeders may be cut off and dead-ended in the clamp. Or, the cable can be carried through for jumper connection to another feeder either below or on either side or above the clamp. Exhibited at the A. E. R. A. Convention, this New O-B Feeder Dead End Clamp Assembly attracted the interest and favorable comments of scores of overhead men.

Ask your O-B Salesman today for *complete* details. Or write for Folder No. 145-B. Address

Ohio Brass Company, Mansfield, Ohio  
Canadian Ohio Brass Co., Limited  
Niagara Falls, Canada  
761L

### Note These Advantages

1. Eliminates serving, soldering, and taping of cable at dead ends.
2. Cuts installation time 30% or more.
3. Prevents wastage of three to four feet of cable on each dead end.
4. Is compact—ladders are unnecessary for installation.
5. Affords a neater, more durable job.



**Strain or Semi-Tension Assembly**  
The new O-B Strain or Semi-Tension Clamp Assembly makes it possible to turn corners on two or more poles without dead-ending the feeders in both directions. Cat. Nos. 15343-15344.

# Ohio Brass Co.

NEW YORK CHICAGO PHILADELPHIA

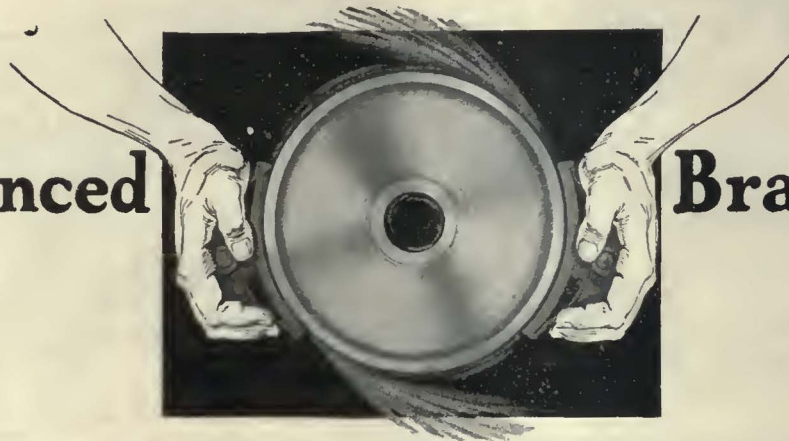


PITTSBURGH ATLANTA CLEVELAND ST. LOUIS SAN FRANCISCO LOS ANGELES

PORCELAIN INSULATORS  
LINE MATERIALS  
RAIL BONDS  
CAR EQUIPMENT  
MINING MATERIALS  
VALVES



**Balanced**



**Braking**

## In line with modern principles

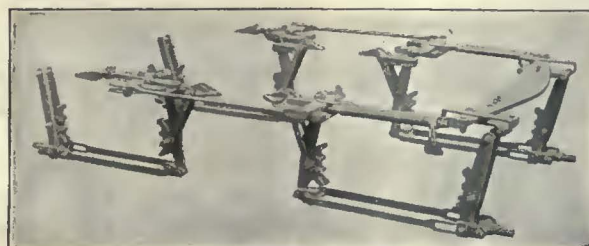
Higher rates of retardation are demanded as a part of the program of speedier suburban and street railway service. With two brake shoes per wheel instead of one, the clasp brake is admirably suited to producing maximum retarding effect, with minimum strain and wear on truck and journal parts.

*Balancing the heavy braking forces on opposite sides of the wheel has many advantages*

- |                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>1. Less journal box wear.</li> <li>2. Permits wheel to follow freely, vertical inequalities in track.</li> <li>3. Makes use of flanged brake shoes practical.</li> <li>4. Higher co-efficient of friction.</li> </ol> | <ol style="list-style-type: none"> <li>5. Divides energy absorption between two shoes, thus reducing heating effect from brake application.</li> <li>6. Reduces frequency of brake shoe replacements on the car.</li> </ol> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**AMERICAN STEEL FOUNDRIES**  
NEW YORK                      CHICAGO                      ST. LOUIS

## American Multiple Unit Clasp Brake



# TO PUT YOUR 1928 TRACK PROGRAM ON A PRODUCTION BASIS—

—ask yourself these questions

## 1. *Construction operations:*

- (a) Are they all necessary?
- (b) If necessary, can they be improved?

## 2. *Parts and materials:*

Are any parts through lack of uniformity slowing up labor operations?

## 3. *Time:*

Can man-hour time per operation be reduced by using labor saving devices and machinery?

## 4. *Design of materials:*

- (a) Is the design wasteful of materials?
- (b) Can lower rails be used?
- (c) Are joints modern and long lasting?
- (d) Are ties a compromise with custom or are they a well thought out, uniform product—designed to save labor and materials, with no sacrifice of bearing under rail and on ballast and sub grade?

## 5. *Design of Track:*

- (a) Does the track design meet the requirements of higher quality and lower costs by economizing material and labor?
- (b) Does the design adapt itself to the complete use of labor saving machines?
- (c) Has the design immediately available labor saving equipment for all operations?

On any program of a mile or more of track,  
Twin Tie production methods can be applied.  
A conference with our engineers will in no  
way obligate you.

THE INTERNATIONAL STEEL TIE CO.  
Cleveland, Ohio

# STEEL TWIN TIE TRACK THE BASE OF MODERNIZATION

# Build "good will" with Modern Cars

Cars recently built by this company for several properties have brought forth much favorable comment from the public in the various localities. The riding comfort has been especially noted. This is a feature of the modern car that goes far to increase good will and build patronage.



CUMMINGS CAR  
AND COACH CO.

111 W. MONROE ST.  
CHICAGO, ILL.





AN INSPECTION TOUR  
OF THE WELL-EQUIPPED  
CAR

A free publicity service—

## HUNTER-KEYSTONE ILLUMINATED SIGNS

Use clear, clean, readable illuminated signs on your cars to advertise your service, establish your routes and facilitate re-routing.

Hunter-Keystone Illuminated Signs "tell the public where you're going" night and day. They consist of specially printed roller curtains which are turned or regulated by a small crank handle so that any one of the ten or more destination names may appear. They are mounted in sheet steel cases or they may be built into the car structure.



Hunter-Keystone Signs

Let us send you complete information about Hunter-Keystone Illuminated Signs and about other Keystone Equipment found in the modern well-equipped car.

Write for ESSCO Catalog No. 7.

Home office and plant at 17th & Cambria Sts., PHILADELPHIA; District Offices at 230 So. Clark Ct., CHICAGO; 50 Church St., NEW YORK; Bessemer Bldg., Pittsburgh; 88 Broad St., Boston; General Motors Bldg., Detroit; 316 N. Washington Ave., Scranton; Canadian Agents, Lyman Tube & Supply Company, Ltd., Montreal, Toronto, Vancouver.

# ELECTRIC SERVICE SUPPLIES Co.

MANUFACTURER OF RAILWAY, POWER AND INDUSTRIAL ELECTRICAL MATERIAL





*The Capital of Rhode Island is one of the many cities now enjoying Safety Car benefits*

## Selling A Better Service - - - - at an economic gain

*Safety Cars* are modern cars, whether they be new cars, or old equipment adapted to Safety Car Devices Control.

*Safety Cars* are modern cars, inasmuch as their feature of concentrated control permits the operation of more cars, at faster schedules, at no increase over old operating costs.

*Safety Cars* stimulate public good-will by affording better service, at better schedule speeds, which means increased patronage.

*Safety Cars* do Sell A Better Service at an economic gain, which accounts for their nation wide acceptance.



# **SAFETY CAR DEVICES CO.**

OF ST. LOUIS, MO.

*Postal and Telegraphic Address:*  
**WILMERDING, PA.**

CHICAGO SAN FRANCISCO NEW YORK WASHINGTON PITTSBURGH

*"We make the Safety Car Control Devices which make the Safety Car."*

# Guy A. Richardson

## Analysis of the



“The new Twin Coach type bus, like the street car, utilizes for passenger carrying 100 per cent of street space occupied, has quick get-away because of its adequate power facilities and has added reliability of service due to its twin motors. Also like the street car, it permits a free circulation of the load. These advantages over the older type buses influenced the Chicago Surface Lines in adopting the Twin Coach as its standard for feeder bus service.”

GUY A. RICHARDSON,  
Vice President, Chicago Surface Lines.

The MOST SIGNIFICANT VEHICLE  
IN 1922 TO TRANSPORTATION

# Never before such

## Sweeping the Industry

"We have been running one of your Twin Coaches on a heavy downtown residence line for several weeks, and patrons of this line are unanimous in their praise of the riding qualities of the vehicle. In my opinion this type of body, offering as it does a large seating capacity at low weight per seat is the solution for lines whose traffic density and length of trip cannot be handled by a twenty-nine passenger bus, and gives an all weather vehicle of large carrying capacity without the many objectionable features found in the double deck vehicle."

*F. G. Buffee, Vice President  
in Charge of Operations  
Kansas City Public Service Co.*

"The Twin Coach general type and construction is of such a nature that we will be able to earn more money per bus mile than we can with anything we have heretofore used. On any heavily traveled line, it will be possible to reduce the number of bus miles very materially and at the same time maintain the same amount of gross income."

*H. L. Bollum, President  
Twin City Motor Bus Co.  
Minneapolis-St. Paul*



MICHIGAN CITY



DETROIT



KANSAS CITY



HOUSTON



WILKESBARRE

# The New Gasoline Street Car

# Rider Appeal!

## Meeting Every Promise

"The Twin Coach arrangement of driving each rear wheel by a separate motor does away with many of the troubles experienced with the single motor drive through a differential type of rear axle.

"I consider the constant width body a distinct advantage over the typical narrow front vehicle in obviating or reducing accidents, also increasing the seating capacity on a single deck is surely preferable to the double deck type."

*W. B. Mayo, Chairman Board  
Detroit Motorbus Co.  
Transportation Authority  
Land and Air*

"The street car type coach body, built by the Twin Coach Corporation, is at present without doubt the most advanced and practical for single deck operation. It has drawn very favorable comments from the riding public because of the easier riding qualities and excellent capacity for seated and standee passengers. Altogether it is a body that should meet with approval from both patrons and operator."

*Thos. B. Bedford  
Operating Manager  
Detroit Motorbus Co.*

NORFOLK

TACOMA

BOSTON

Twin Coach

CLEVELAND

FREE

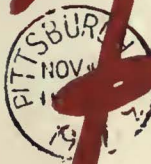
POKANE

LOS ANGELES

OAKLAND

with Balanced Load or Rubber

# You BET!



PITTSBURGH MOTOR COACH CO.

214 LEXINGTON AVE., E. E.

PITTSBURGH, PENNA.

Attention Mr. T. W. Noonan  
General Manager

## Say Pittsburgh Riders

Do you like the Twin Coach?

Wonderful

Do you like the Twin Coach?

YOU BET

Do you like the Twin Coach?

Yes Indeed

Do you like the Twin Coach?

Yes - Best you have had yet

Do you like the Twin Coach?

Very much

Do you like the Twin Coach?

Great - real Progress

Do you like the Twin Coach?

Hope you get more of them

Do you like the Twin Coach?

I like the Twin Coach better than any bus I have been in -

Have you any suggestions for improvements?

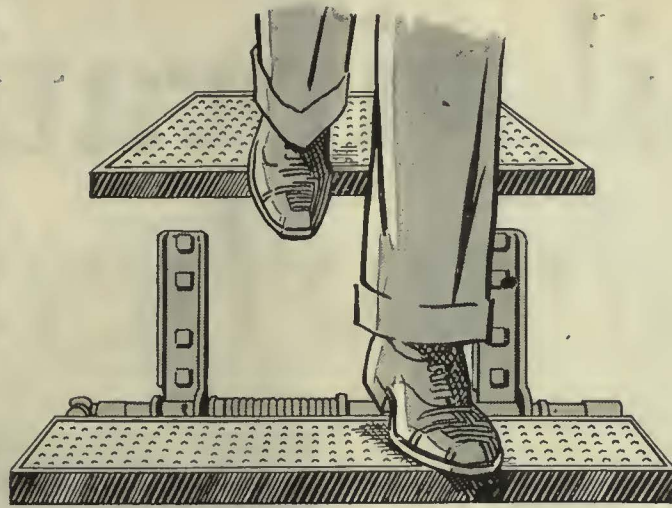
The service rendered with Twin Coach is all that any one could ask for

Have you any suggestions for improvements?

Come of Perfection. Put them on Squirrel Hill route

ARE JUST A FEW ANSWERS TO POST CARD QUESTIONNAIRE SENT OUT BY PITTSBURGH MOTOR COACH CO. NAMES AND ADDRESS UPON APPLICATION

# Build Your Riding with Twins

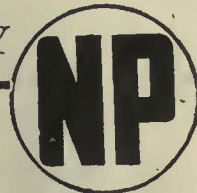


# TREADLE-IZE★

---

★The last word in  
efficient door  
and step control  
and in economical  
operation of the  
circulating load

“CONSTANTLY BETTER”



NATIONAL PNEUMATIC COMPANY

*Executive Office:* Graybar Building, New York

*General Works,* Rahway, New Jersey

MANUFACTURED IN TORONTO, CANADA, BY  
Railway & Power Engineering Corp., Ltd.

CHICAGO  
518 McCormick Building

PHILADELPHIA  
1010 Colonial Trust Building



# “Rail vibration is absorbed...

*maintenance costs are reduced”*

“FOR a long time we studied the problem of how best to overcome the harmful effects of rail vibration,” said Mr. H. A. Abell, Engineer of Way & Structures of the New York State Railways. “Much of our street pavement here in Rochester is asphalt, and we have found that, under ordinary traffic conditions, the pavement next to the rail disintegrates rather rapidly.

“In 1924 we made our first test installation of an asphaltic rail filler or cushion, next to the rail. The results of this trial have been most satisfactory. We have found that the asphaltic cushion effectively absorbs vibration and protects the pavement. And we have also noticed a considerable reduction in noise.

“We now have about two and a half miles of double track insulated in this way. This year we shall install nearly two miles more. In fact, this is now standard construction in the case of asphaltic and macadam pavement. We consider it an economy because of the notable reduction in maintenance costs.”

\* \* \* \* \*

And the “asphaltic cushion” described by Mr. Abell is the Carey Elastite System of Track



*H. A. Abell, Engineer of Way & Structures of the New York State Railways, at Rochester, N. Y. Mr. Abell has had long experience in dealing with electric traction problems, for the past ten years with the New York State Railways, and prior to that with the Schenectady Railway Co.*

Insulation. This remarkable improvement in track construction means not only real savings in maintenance, but also smoother, quieter operation. The Carey Elastite System of Track Insulation is now being adopted by leading traction engineers all over the country. Full information on request.

THE PHILIP CAREY COMPANY, Lockland, CINCINNATI, O.

**Carey Elastite**  
TRADE MARK REGD. U.S. PATENT OFFICE  
 SYSTEM OF TRACK INSULATION





# Are you hauling a paying volume of good will?

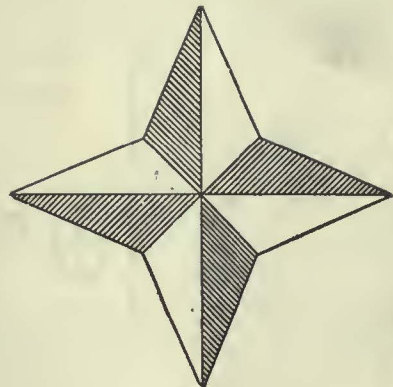
A courage to face facts and an unbiased, penetrating curiosity applied to the street railway industry has revealed one outstanding fact ribbed truth. The companies that have "operating a system" uppermost in their minds are making much less money than are those who are actually engaged in selling COMFORTABLE RIDES.

Basically it is only a difference in viewpoint but the right viewpoint is always a deciding factor when competition enters any field. A line that hauls a heavy volume of good will carries, too, a high total of passengers. "Capacity with Comfort" one of the four cardinal points of Cincinnati BALANCED Lightweight Cars is a subject of paramount importance.

How soon will it be possible for you to study "Capacity with Comfort" with one of our company's representatives?

CINCINNATI CAR COMPANY  
Cincinnati, Ohio

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



The cardinal points of today's demand combine in the Four Features of BALANCED Design

"Capacity with comfort."

"Speed with safety."

"Lightweight with strength."

"Beauty with low cost."

# Safeguard and Accelerate Traffic

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

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

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

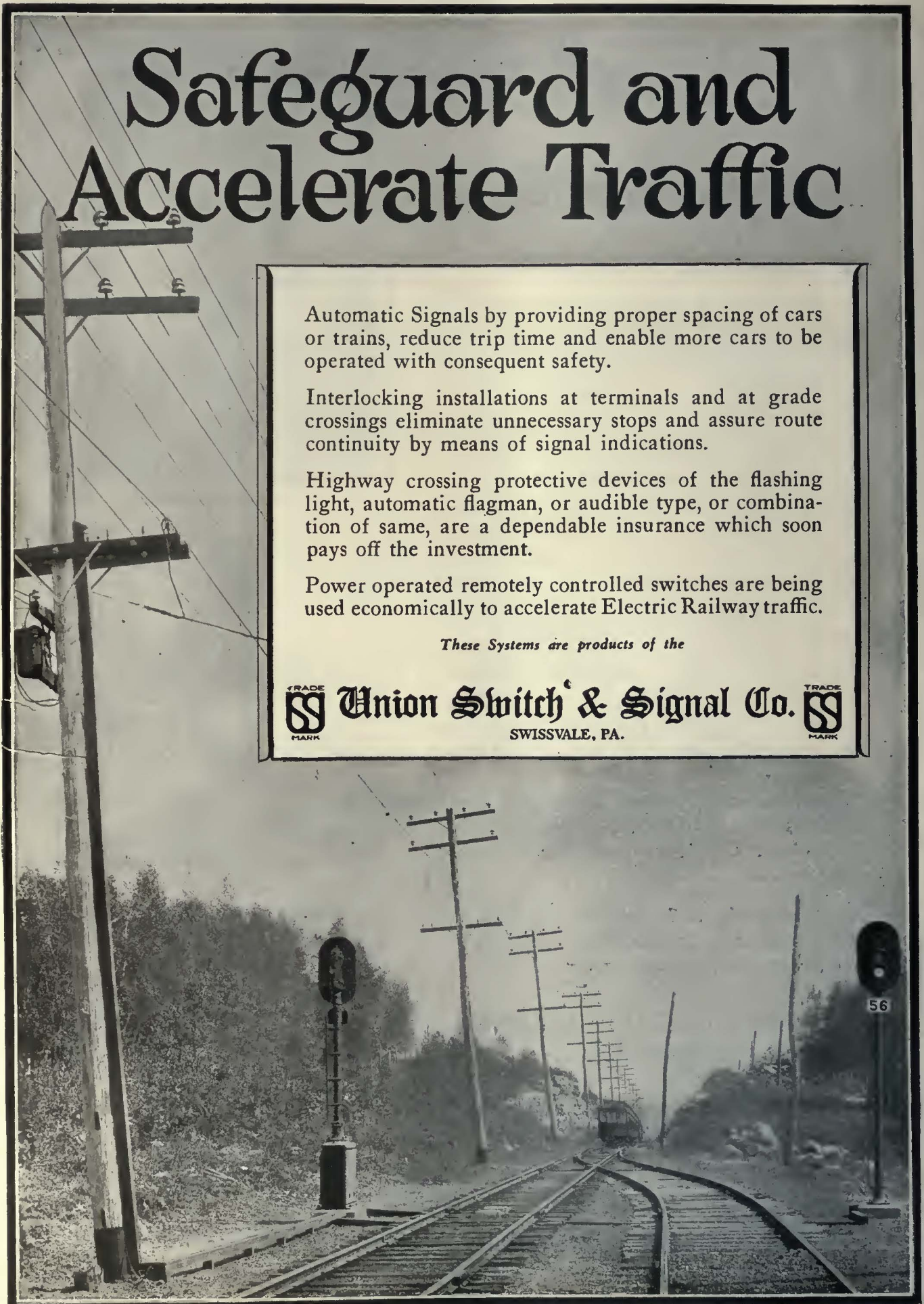
Power operated remotely controlled switches are being used economically to accelerate Electric Railway traffic.

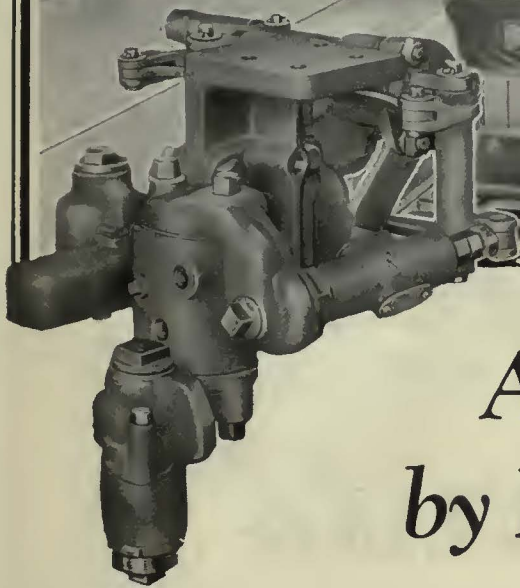
*These Systems are products of the*



**Union Switch & Signal Co.**

SWISSVALE, PA.





## Accelerating Traffic by Better Decelerating

The Westinghouse Variable Load Brake helps to accelerate traffic because—

It automatically adjusts braking effect to suit car loading.

Its effectiveness is independent of fluctuation in main reservoir pressure.

It decreases the time of brake application and release.

It permits a higher rate of retardation.

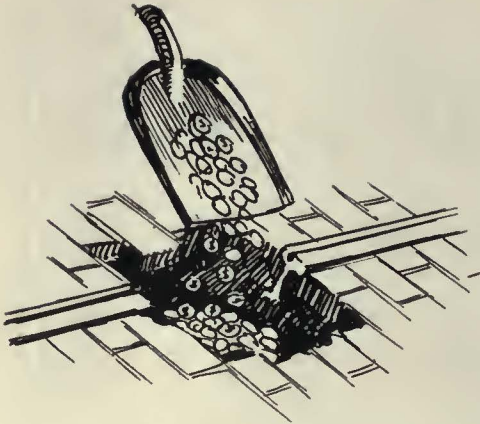
The result — consistently shorter stops.

Let our representative amplify and demonstrate the foregoing statements.

Perhaps the Variable Load Brake will help solve *your* traffic problem.

WESTINGHOUSE TRACTION BRAKE CO.  
General Office and Works: WILMERDING, PA.

# WESTINGHOUSE TRACTION BRAKES



Every time you open it up to patch that joint again—

it's just like shoveling more dollars into a hole in the ground. They're gone and they haven't done any permanent good.

With Thermit, the story has a happier ending! A Thermit Weld gets rid of the joint, once and for all. It makes a smooth continuous piece of track without a break—a piece of track which will develop the full life of the rail itself, without further maintenance cost.

1  
or  
1000 THERMIT WELDS



It's a proved proposition, economical for one joint or for many, for the ordinary joint repair job or for the mile of track to be rebuilt. Do the repair jobs with Thermit and watch the maintenance costs go down.



**METAL & THERMIT CORPORATION**

120 BROADWAY, NEW YORK, N.Y.

PITTSBURGH

CHICAGO

BOSTON

SOUTH SAN FRANCISCO

TORONTO



10 to 40  
stops per mile—

How about *your* wheels?

Cars in city service stop that often, and stop quickly. Wheels and Axles must give unusual service to prove economical on such lines.

“Standard” Wheels, Springs and Axles are chosen for the nation’s leading railway lines. They answer service demands.

*Rolled  
Steel  
Wheels*

*Armature  
Shafts*

*Axles  
and  
Springs*



“FOR EVERY  
TYPE OF CAR



IN EVERY  
TYPE OF  
SERVICE”

# STANDARD STEEL WORKS COMPANY

PHILADELPHIA, PA.

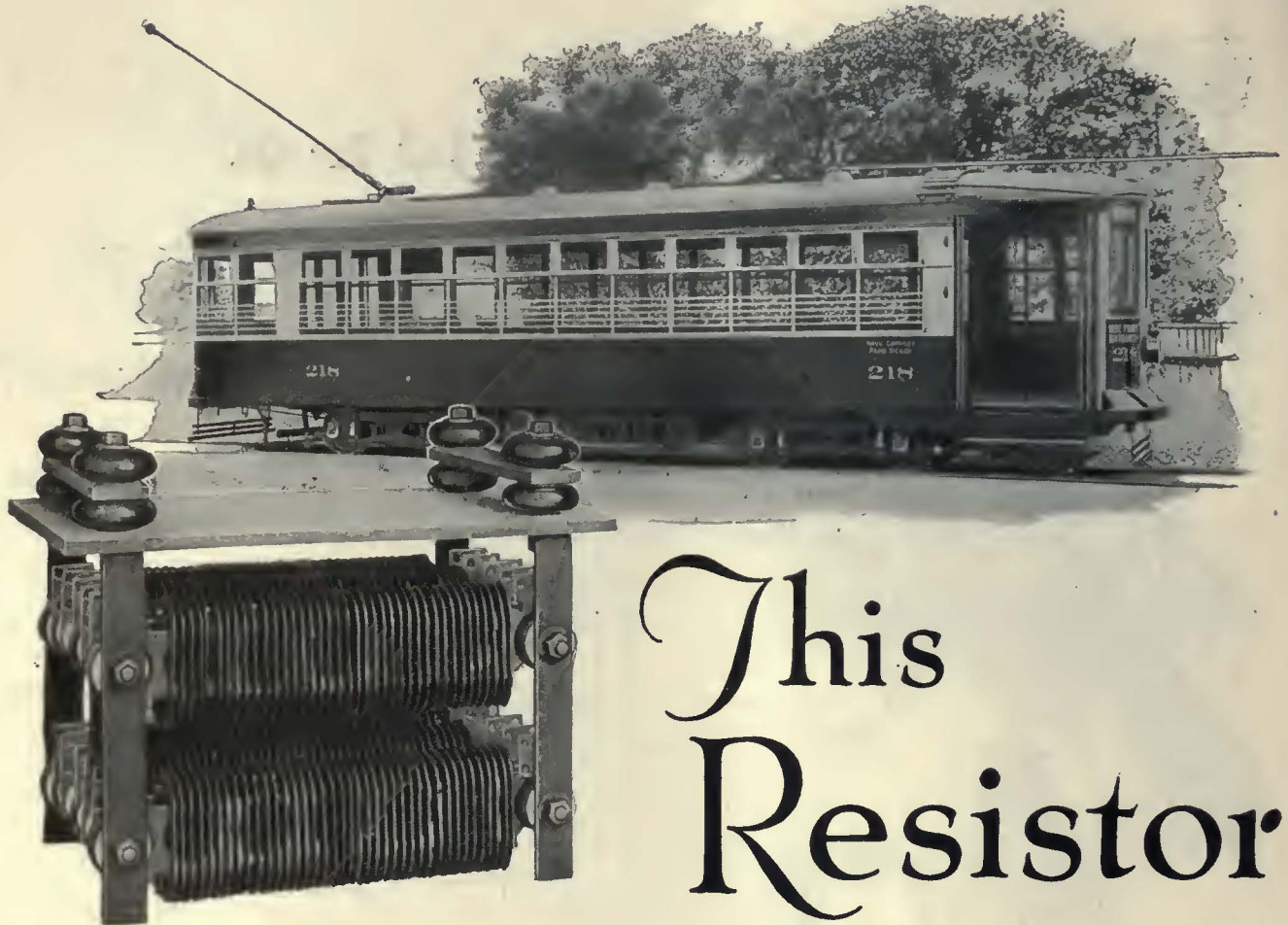
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# This Resistor does not break or corrode

Exposure to the elements does not affect the G-E Type EW resistor, because the units are made of a special non-corrodible alloy; nor will vibration break it, because the alloy is flexible and has a high tensile strength.



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# GENERAL ELECTRIC

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

# Electric Railway Journal

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## Financial Structure of Buffalo Company Strengthened

STOCKHOLDERS of the International Railway, Buffalo, have approved a plan for strengthening the financial structure of the company, thereby improving its credit and increasing its ability to render steadily improving service. The plan provides for immediate amortization of intangible capital which the Public Service Commission has suggested be amortized over a period of years, for the writing off of strike suspense, for the issuing of no par value common stock in exchange for present common stock of \$100 par value and for the issuing of \$2,000,000 of preferred stock. The present plan is to make the preferred issue available first to present stockholders in proportion to their holdings.

This action might be dismissed with no other comment than that it is merely another move in the upbuilding of the system, but it really is much more important than that. No end of hard work has been done by the management in Buffalo, and it would appear now that the company there is again coming into its own. The city is saturated with autos even to a greater extent than other cities of similar size, and in addition to that there have been elements of political antagonism to contend with that were largely heritages from past régimes. Some of that ground has been gone over before in *ELECTRIC RAILWAY JOURNAL*.

The conditions at Buffalo which make desirable the financial changes now proposed had their beginning in 1912, when the railway mortgaged its property. At that time the Public Service Commission directed that the company set up on its books an item of \$12,651,500 as intangible capital to be amortized over a period of years. Of this amount approximately \$4,000,000 has been written off. The company is now carrying on the asset side of its balance sheet an item of roughly \$6,000,000 strike suspense. It was intended that this should be written off over a period of years, but the present plan will permit the amount to be written off immediately. The substitution of no par value stock for \$100 par value stock and the resulting changes in the company's balance sheet have been approved by the Public Service Commission. Sanction for the proposed issue of preferred stock will now be sought from the commission. Proceeds from the sale of this preferred stock will be used for the substitution of permanent financing for temporary financing of necessary capital expenditures and for future similar requirements.

For the benefit of the stockholders of the company and for the information of the public the company explains that changing the common stock from \$100 par value to no par value has no effect upon the value of the stock, or upon its earning power. There will be exactly the same number of shares, and each certificate will represent the same share of ownership. It

is an interesting move, one that the entire industry may well ponder, particularly since the change would seem to presage early future financing with preferred stock, in which it is reasonable to expect both the employees of the company and the public as well will be permitted to participate.

## Lessons Taught by the Pittsburgh Traffic Report

DISCLOSURE in the recent traffic study in Pittsburgh that the number of vehicles entering the business district each day has more than doubled during the past ten years, shows a situation that could probably be paralleled in many other large cities of the country. A second fact found in this same survey, that in spite of this influx of buses, taxicabs and private automobiles, the street cars still carry the vast majority of the city workers to their places of business, will also find a counterpart in other metropolitan areas. Hence, if there is a solution of the Pittsburgh problem, it ought to help elsewhere.

The Pittsburgh City Transit Commission thinks that the answer is to put the trolley cars within the business district in a subway which later could be used for high speed trains when rapid transit extensions can be built in the outlying portions of the city. This will relieve the congestion in the downtown area by permitting all of the street surface to be used by free-moving vehicles only, according to the commission. The higher speed of the cars possible underground will attract more passengers to them and thus help still further to relieve the surface congestion.

In cities large and wealthy enough to afford underground highways, the plan is an excellent one, provided the cost of the improvement is not assessed entirely or largely on the car riders. They are only one group among many to whom the increase in street space thus made possible is of benefit. Nor should the transportation company be made to bear the cost. It is quite as apt to suffer as to benefit by the change. Its cars will make better time, it is true, and the company will gain in the number of passengers which it will carry. But these passengers will be in the long-distance class, and the pick-up business of short-haul passengers will probably be much less. Experience has shown that the short-distance rider does not like to climb up and down steps. It must also not be forgotten that removal of the tracks from the surface will decrease the means for riding within the business district. Those who are accustomed to patronizing the street cars for this purpose will have to adopt a more expensive way for getting about or else walk.

Of course, there are many cities in the country with serious street congestion where such a solution is impracticable. A subway is a luxury which only a few communities can afford. The smaller cities must continue to operate cars and automobiles on the same street level.

There, the aim should be to secure the maximum useful width of street in the congested sections by reducing or eliminating parking, then to co-ordinate the traffic flow by shortening the waiting time of vehicles at crossings and increase the speed of movement, particularly of the street cars. Until the average car speed equals that of the free-moving motor vehicle on the same street, street railway operation will be under a handicap.

### Columbia Reaps the Consequences

COLUMBIA, S. C., is the scene of a transportation travesty with a record number of performances which is becoming a bore to spectators and something of a blight on the accomplishments of that section of the South. Reports emanating from that territory state that the citizens are more and more aroused over the lack of a responsible transport service and are going to force the issue in the April election of City Council members. But making the transportation tangle the main issue in the election will not undo the bungling and befogging of the issues involved for which honors are evenly divided among the people and the authorities. Constructive thinking, deft handling, conciliatory methods and active authority are the new characters that must enter quickly to produce a happy ending in Columbia.

Glossing over the facts will not mitigate the conditions aggravated since Jan. 1 of this year when the citizens were left to the mercy of unregulated jitneys for their means of transportation. Almost a year has transpired since the Columbia Railway, Gas & Electric Company, unable to justify necessary expenditures to physical property, abandoned service on its railway system of 32 miles. A glance at the traffic records since 1923 is convincing proof of the inability of the company to continue to supply this service. In that year 3,270,321 passengers were carried. Since then there has been a consistent decline—1924, 2,948,928; 1925, 2,290,734 and in 1926, 1,613,891. The loss of patronage forced the company to abandon service on March 11, leaving approximately 50,000 people to be transported by the systems which had contributed to its downfall, namely, the Carolina Transit Company and the 10-cent haphazard jitneys.

Events since that time have been covered in the news section of this paper. Suffice it to say now that the past fourteen months have been prolific of multifarious moves toward restoration of railway service, counter moves for bus operation, bills to eliminate the jitney, threats to intimidate the railway, an impasse, commission opinions, another impasse, federal stay, public demands and so on ad absurdum.

Whatever conclusions might be drawn on the rights of one utility agency against another, it would appear that co-operation and conciliation could certainly have done no worse than condemnation and conflict, and considered in the light of experience in other cities, they might have helped toward a solution. Three separate and distinct agencies serving approximately 50,000 people were competing for a failure, and that failure appears to have fallen on all three. Now if the people want the railway service restored—and many indications point that way—then that system should be so supported that it will be a paying enterprise responsible to a thinking and just authority and reliable to a co-operative and fair-dealing public. If public opinion prefers another system of transport, then such a system should be installed and

should meet the same conditions as would prevail with a railway.

These unsavory details in the story of a public service represent the ultimate result of destructive public policy founded on much opinion, little knowledge and the lack of a spirit of fair play. One can hardly refrain from expressing the opinion that Columbia is in a measure reaping as it sowed. The transportation comedy there has its tragic aspects—tragic indeed to those who invested their money in good faith. It is to be hoped that the story may be broadcast to other cities that are inclined to think that they can manhandle and starve facilities and have them continue to perform. As for Columbia, it is high time for it to draw the curtain on the scene and put on a new act with sufficient promise to induce forgetfulness of past performances.

### Accountants Should Not Be Historians Only

GROWING interest in accounting is shown by the work of the Central Electric Railway Accountants' Association at its recent meeting. Problems that deal with the progress of the electric roads in the territory were discussed at length and plans were made for furthering the interchange of freight, handling of records and other details that are essential if these railways are to increase their business. Along the same line, President Healy in his inaugural address showed how the accountants have been an influence for many years in the affairs of their companies.

A progressive viewpoint such as this is essential if the accountant is to be the power for good that he can be. He is in a position where he is able to wield an immense influence over his company. While the keeping of records of what has happened already is fairly simple, it is the interpretation of what is likely to happen, as disclosed by the figures, which is of far greater value. This is a task of no mean importance. Budgeting is being resorted to more and more, both with regard to expenditures and on some properties with regard to revenues. Naturally if a program for expenditures is to be figured out for a year or any longer period it is essential that some attention be paid to the collection of revenue that will make the program possible. In both of these phases the accountant must exercise the best of judgment if the estimates are to be of maximum value.

Another class of accounting, which perhaps has not been given equal attention, is the determination of costs for different types of construction or equipment. For instance, carefully kept records over an extended period almost invariably will indicate which type of car, of motor or of track is the most economical. Operating costs should indicate whether it is an economy to continue the use of an obsolete car, an old substation or an antiquated stretch of track as compared with the cost of new. Similar comparisons can be made regarding any detail of the operation. Occasionally the individual departments have made the attempt to keep such figures, often without result. The accounting department, however, is the place where information of this sort can be compiled most accurately and most cheaply. Naturally, conferences with the other departments involved are necessary if intelligent statistics are to be collected. It is the exercise of such intelligence that makes the accountant a real power in his company rather than a mere bookkeeper. Meetings of accountants that look forward to this end are well worth while.



## The Turk Turns on the Onion Eater

CIVILIZATION as the West knows it has had unexpected results in its application to the Turks. The fez is going or has gone, the harem as an institution has passed, trousers have come in for use by the ruler's wife and his inamorata or inamoratas and the veiled woman meanders only through the pages of history and the stories of oriental romance. In Turkey modernism has gone mad. Witness the reported order issued recently to street car conductors of Constantinople to eject from the trams passengers who have been eating onions. In other words, conductors there must really know their onions. So it will be the rule that the men who man cars there must choose between the onion eater and the lotus eater. There must be nothing the matter with their olfactory organs lest an inspector passing through the car detect an odor where they have sensed none.

Here is a parallel out of the East to the beautiful girl in the newspaper ad who grows reticent because the man with millions or erudition that she should adore is a victim of halitosis. In that respect she has nothing on the Constantinople conductor who should now apparently recommend the use of some deodorant. Since onions are a national dish of the Turks the idea of legislating against the weeping weed might have terrible effects should others adopt a similar policy. Suppose Dublin conductors had to put passengers off who were suspected of eating Irish stew, Viennese trainmen to eject those suspected of eating Hungarian goulash, Berliners those of eating Limburger cheese, Glasgowers those of eating Scotch scones, and New Yorkers those of eating gefilltefish or known to have gulped garlic.

Here is an idea for the segregation of passengers along gastronomic lines. Enforced use of the open air elevated lines in New York by all of its garlic eaters might make it possible for the rest to ride in comfort in the subway. There is no end to the possibilities that are opened up. It was the late Mr. Whitridge, then receiver of the Third Avenue Railway in New York, who said that he didn't improve the rolling stock of some of his lines because there was no sense of putting people who apparently never bathed into surroundings with which they were utterly unfamiliar. Of course he stretched the thing a little, as was his wont as a practical joker. He did what little he could about it. The Turk apparently is more militant. The gastronomic special will never be realized, but if advices so far at hand are to receive credence it will probably not be because the Turk has not tried. In any event it will be interesting to have further information on the effect of the order.

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## Interborough Labor Controversy Has Several Angles

HASTY conclusions should not be drawn from the decision of Justice Wasservogel in the Interborough Rapid Transit labor case. Certainly, the decision is not the sweeping victory indicated in the statement of the organizer of the Amalgamated Association to the effect that "the absolute justice of our cause has now been established." As the *Wall Street Journal* has forcefully pointed out, nothing in the decision as reported in the press touches upon the asserted right of the company to lay down such conditions of employment as it pleases. The court simply refuses the Interborough an injunction to restrain the national union from soliciting Inter-

borough employees to join its ranks. It affirms the right of the company to make as a continuous condition of employment for each individual in its employ that he will not join any particular union. Reduced to its essential the present decision is that the agreement which the railway requires of all of its employees to sign is on its face inequitable and therefore not the kind of a contract which a court of equity will protect. The court ruled that whatever the status of the contract at law, there was no compensating consideration where an employee abandons all right to leave the service of his employer, whereas the company reserves practically entire freedom to discharge him.

In the various comments on the case the instance of the United Mine Workers is mentioned and also that of the more recent decision of a federal court in Texas under which the Southern Pacific Company has been required to recognize a national union which claimed to represent the road's clerks, instead of the union with no affiliations outside the company. As between the Interborough case and that of the mine workers, there would seem to be an apparent conflict, since in the mine case the Supreme Court upheld an injunction which prevented the United Mine Workers from soliciting membership among the non-union miners in West Virginia. Whether the conflict here is real or only apparent depends, of course, on the nature of the two contracts.

The Southern Pacific litigation, just decided, involves both questions of law and of policy far reaching in their importance. The questions of law arise out of the construction of the so-called railway labor act passed in 1926. The questions of policy may be briefly stated to be whether the local employees on a railway shall be free to conduct their negotiations with the management in their own way, or whether they shall be dominated and controlled by an outside organization. The position of the company was that in dealing with the local association, which its clerical employees had formed on these lines, the company felt that it was representative not only of a majority of the clerical employees, but that it was a local organization that would have more vitally at heart the success of the railway enterprise in which both management and men were engaged, and the welfare of its members as a whole, than the clerk's union dominated by central powers from abroad. The company has determined to carry the case up on appeal.

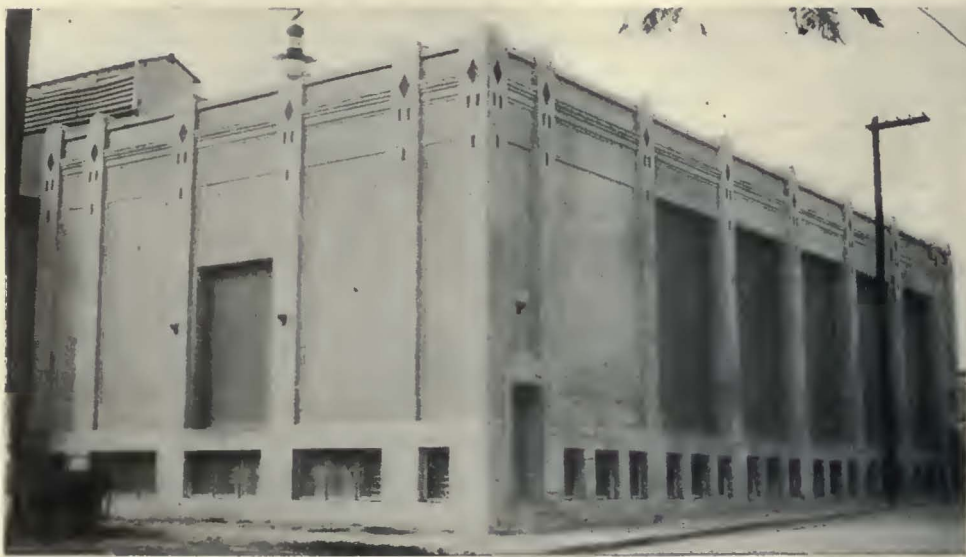
So much for some of the technicalities. Within the limitations imposed by the 5-cent fare the Interborough has shown itself ready to deal liberally with its employees. It has even indicated that if the proposal for an increase in fare is successful, the men will participate to a greater extent than at present in the earnings of the company. But even at the present rates of pay, there is no indication that the roster of the company is not always full. A condition of this kind certainly indicates that the scale of pay must be fairly comparable with that which obtains in other lines of work similar to the railway service in the conditions that are exacted from those engaged in it. That, of course, is just one way of looking at the matter. If it would seem from the court's decision that the company has perhaps been over-zealous in the lengths to which it has gone in its efforts to protect all its employees, the reason for its concern was very well expressed by the Amalgamated's own organizer when he said following the court's ruling that "we intend to hammer our way through to victory whether or not stubborn Bourbons oppose our progress." This statement appears to leave little doubt as to the identity of the aggressor.

# Two Automatic Substations Installed in Cuba

Operation of the new stations has increased the trolley voltage and given relief to the other substations of the Havana Electric Railway, Light & Power Company

By G. S. Whitlow.

Switchboard Engineering Department, General Electric Company



Principe, Cuba, automatic substation, built to carry railway, power and lighting loads.  
A similar station has been built at Toyo

PERHAPS the most interesting recent installations on the island of Cuba are two automatic substations recently put into operation for the Havana Electric Railway, Light & Power Company, one in Principe, the other in Toyo. They are arranged for automatically supplying railway, power, and lighting loads. Power is brought in through 13,200-volt, 60-cycle, three-phase underground feeders and is stepped down to 4,000 volts for a.c. distribution, or converted into 600 volts direct current for the street railway system.

Prior to the new installation, the distribution system of this company included eight outlying substations, four for railway, power and lighting loads, two for railway loads only, and two for lighting loads only. All of the a.c. distribution, except for three 6,000-volt feeders from the power plant, is at 2,300 volts, three-phase. Voltage in each feeder is regulated by a bank of two induction regulators connected in open delta. The 600-volt railway system is ungrounded with two overhead trolleys.

The exterior of the Principe substation is shown in one of the views. The other, located in Toyo, is identical in construction. Both are of reinforced concrete, having a single story with basement, and built to withstand the cyclones experienced in this climate. Neither building is soundproof but with all the doors closed the machine noises are barely perceptible outside. The transformers are installed in fireproof compart-

ments with doors opening on the outside. These may be seen closed in the view of the station and opened in another illustration. On the main floor of the Principe substation, shown in one of the engravings, are the truck equipments, d.c. switchboards, synchronous converter, and power transformers. Space and conduit runs have been provided for a second converter and future d.c. feeders. The voltage regulators, current limiting reactors, station service transformers and storage batteries are located in the basement. Provision has been made for two additional 4,000-volt feeders, as may be seen in the illustration of the basement.

Ventilation of the machine room is by louvers below the main floor level in three of the side walls. The air passes out through rotary-type roof ventilators. The transformer compartments have forced ventilation, the cool air entering through louvers below the grille-work floor on which the transformers are set, while the warm air is forced out by individual motor-operated fans in the roof. When an oil circuit breaker closes, energizing a transformer, the ventilating fan motor for that transformer is automatically started.

Each substation has a 13,200-volt underground tie to a substation that was formerly fed solely by overhead feeders from the power plant. This makes it possible to feed all substations in the system by underground feeders. This is desirable because of the severe windstorms which

sometimes damage the overhead lines. All incoming and outgoing a.c. feeders are three-conductor, paper-insulated, compound-filled, lead-covered underground cables. The power connections inside the substation are single-conductor, rubber-insulated, flame-proof cables.

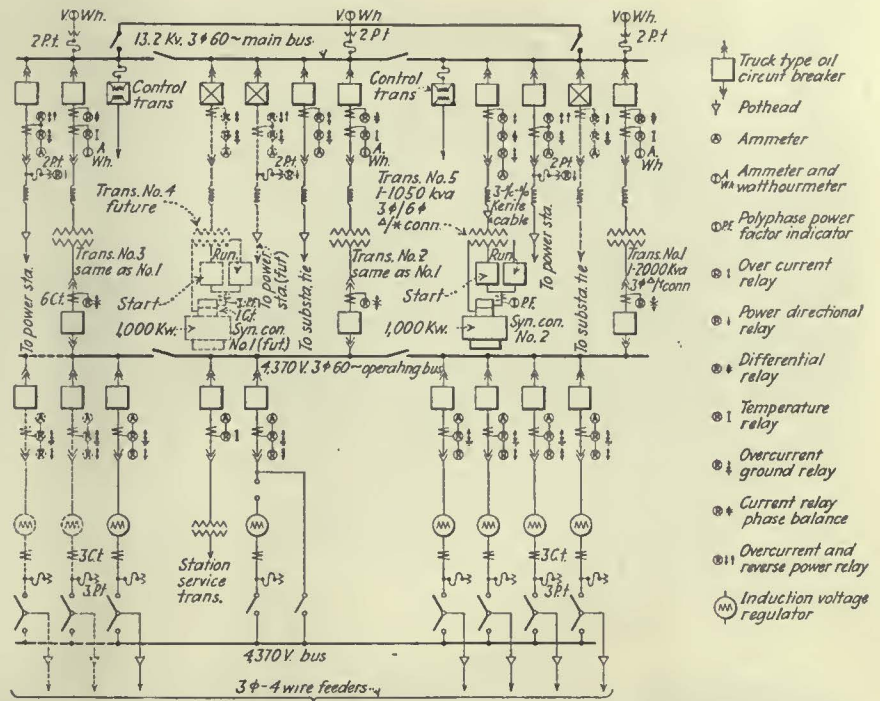
The Principe substation equipment, listed in an accompanying table, includes three transformers, rated 2,000 kva., 13,200/4,370/2,530 volts, three-phase, three-wire and 60 cycles. The neutral on the low side of each one is grounded. The synchronous converter is rated 575 volts d.c., 1,000 kw., six-phase, six-wire and 60 cycles. It is shunt-wound and started from the 50 per cent transformer taps. Eighteen induction voltage regulators, a station service transformer bank and feeder, a 1,050-kva. transformer with 50 per cent taps in secondary and automatic selector supervisory equipment are also installed in the substation. The Toyo substation is identically equipped except there are only two 2,000-kva. transformers.

The incoming line circuit breakers will close automatically when three-phase voltage of the correct phase rotation is impressed on them. If trouble occurs on either line, the breaker in that line will open by the action of the power-directional and over-current relays. When the breakers in the power plant are closed again manually, after the trouble has been cleared, the substation breakers will reclose automatically.

One of the power transformers is normally connected to the load. Should the 4,000-volt a.c. load increase to slightly more than full load in the first transformer, and be sustained for a predetermined time, the second transformer automatically will be brought into service. Similarly, the third transformer is connected when the load

exceeds the predetermined value for two units. Should any transformer fail the next transformer in sequence takes its place. When the trouble on the faulty transformer is cleared it automatically resumes its original place in the sequence. Differential relays protect against internal transformer faults, and thermal relays provide protection against continued overload. By a manually-operated transfer switch transformers No. 1 and No. 3 can be interchanged in the leading and trailing sequence positions to equalize the service.

The substation tie feeder has a transfer switch for local or remote control. In the local position, the tie breaker can only be operated by a control switch mounted on the breaker truck. In the remote position it is con-



Wiring diagram showing relation of the many relays and meters. The broken lines indicate future installations



Transformers are installed in fireproof compartments with forced ventilation, opening only to the outside

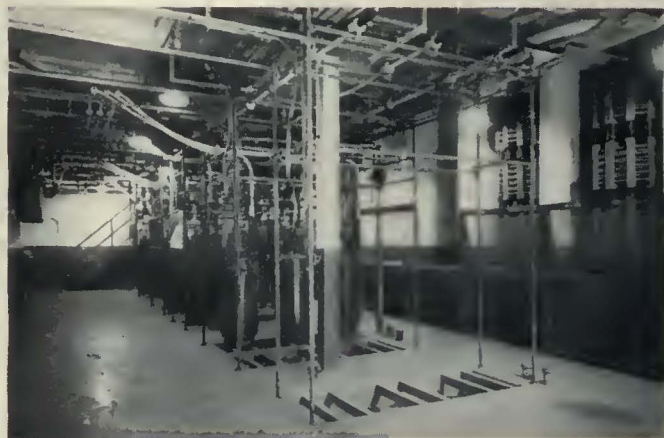
trolled entirely by the supervisory equipment from the dispatcher's office. This feeder is provided with overload protection.

The 4,000-volt a.c. feeders are protected with inverse time delay overload relays, arranged for three reclosures at 30-second intervals. If the overload persists after the third reclosure, the breaker will be locked out and must be reset manually. If the breaker is tripped manually by the control switch, the automatic reclosures will not take place until the breaker is again closed by the control switch.

The synchronous converter equipment is arranged so that with low trolley voltage, persisting for a predetermined time, the converter will be started and connected to the load. This equipment is protected against low a.c. line voltage, single or reverse phase conditions, internal machine faults, a.c. overload, overheated winding, overheated bearings, overspeed, reverse power and flashover. The equipment is also arranged with load limiting resistors in order that the machine will not be connected directly to a heavy load so that it would cause a disturbance to the system, and so as to limit the amount of overload carried by shifting part of this load to



Interior view of the Principe substation showing the positive d.c. board, equipment for the 4,000 and 13,200-volt trucks and the 1,000-kw. converter



Voltage regulators, reactors and service transformers are located in the basement. Note the provisions for installing two additional feeders

adjacent substations. If this limited overload is carried long enough to overheat the resistors, the machine is shut down until the resistors have cooled. Normal trolley voltage and light load will shut down the converter after a predetermined time.

#### EQUIPMENT OF THE PRINCIPE AUTOMATIC SUBSTATION OF THE HAVANA ELECTRIC RAILWAY, LIGHT & POWER COMPANY

All apparatus is designed for three-phase 60-cycle circuits except as indicated.

- Two a.c. incoming lines, each 13,200 volts, 5,000 kva. maximum.
- One a.c. substation tie line, 13,200 volts, 500 kva. maximum.
- Three transformers, each 13,200/4,370/2,520 volt, 2,000 kva.
- Six a.c. feeders (one transfer), each 4,370 volt, 300 amp. maximum, neutral grounded.
- Eighteen induction voltage regulators, 250 amp., 2,300 volt, single-phase, with three connected in Y and neutral grounded.
- One station service transformer bank and feeder, 4,370 volt, 50 kva.
- One transformer, 13,200/430 volts, 1,050 nominal kva., three-phase, three-wire/six-phase, six-wire, step down with 50 per cent taps in secondary.
- One synchronous converter, 575 volt d.c. 1,000 nominal kw., six phase, six wire, shunt-wound and started from the 50 per cent transformer taps.
- Four d.c. positive feeders (one transfer), 600 volts, 1,500 amp.
- Three d.c. negative feeders, 600 volts, 1,500 amp.
- One storage battery, 60 cell, 120 volts.
- One automatic selector supervisory equipment for controlling one oil circuit breaker and indicating the positions of ten oil circuit breakers and one d.c. line contactor.

The automatic d.c. reclosing feeders will trip at a predetermined current. If the overload disappears they will reclose after a definite time, on either stub or multiple feed from either direction.

The automatic supervisory equipment used in these substations is of the selector type. It controls and indicates the position of the substation tie and indicates the position of all other breakers and the d.c. line contactor. In the dispatcher's office is the key and lamp cabinet in which are located the keys for sending out signals, and the red and green indicating lamps. Any change in the position of a substation breaker closes a circuit through an auxiliary switch, starts a motor-sending key and releases the corresponding code wheel which sends a series of impulses out over the line wires to the dispatcher's office. A selector relay having the same code setting is caused to move to the operating point and close an auxiliary relay which changes the indicating lamp. A bell also rings to notify the operator. A similar sequence of operations takes place when the dispatcher, desiring to operate a substation breaker, turns the proper selector key. The dispatcher also is provided with a means of checking the position of any supervised devices.

The installation of these substations resulted in an increase of trolley voltage in heavily loaded areas, lengthening the life of the car motors and permitting better car schedules; relief of the distribution load on other substations by the installation of new 4,000-volt feeders; and the removal of load from one distribution substation, which will be abandoned in the near future.

## Car Efficiency Increased

CHICAGO SURFACE LINES cars made a new record last year for mileage operated without mechanical failure. The average car was run 24,168 miles without a failure of any of its equipment of sufficient importance to require its being taken off the street and out of service. This is an increase of 10,961 miles in operation per car as compared with the previous year and indicates an increase in efficiency of 83 per cent. The better record is made possible by careful maintenance.

During the year 1,591 of the 3,639 cars owned by the company were sent through the shops for complete overhauling and repainting. On this schedule, practically every car will be completely overhauled, repainted and put in first-class condition once in two years.



New terminal buildings at Burlington, East Troy and Watertown provide facilities for interchanging car and bus passengers under cover. This view of the Burlington station shows express platform at rear of building

# Service First

## Is Milwaukee's Transportation Slogan

PART II

By Charles Gordon

**T**HE construction of rapid transit facilities for Milwaukee and the improvement of interurban service has been paralleled by service improvements on street railway lines within the city. One of the first departures in the development of Milwaukee rolling stock was made in 1919 when the first sample three-truck train was designed and built. In 1920, the first sample one-man, two-man car of the Milwaukee 800 type was built in the company's shop and was tried in service.

Back of the three-truck train was the idea of providing a more efficient means of handling rush-hour traffic, through the utilization of the existing equipment on the property. Adoption of this policy led to the double economy of cutting the cost of handling rush-hour business, while at the same time relegating the oldest equipment on the property to operation only a comparatively few hours a day during the rush periods. This made it possible to use money spent for new equipment, for the purchase of comparatively light-weight and efficient cars to be used on base schedules throughout the day. Introduction of one-man operation made it possible to give improved service through operation of cars at maximum possible frequency.

The standard of service in Milwaukee is unusually high and is enforced by the Railroad Commission under the following regulations:

**The Milwaukee Electric Railway & Light Company's program of anticipating the transportation needs of its community has resulted in major improvements of city service and the development of a comprehensive co-ordinated bus system**

On two-man lines all peaks of the rush period shall receive service on the basis of 67 seats for each 100 passengers.

All transition intervals of the rush period shall receive service on the basis of 90 seats for each 100 passengers.

Peaks of the non-rush period shall receive service on the basis of 90 seats for each 100 passengers, except that at no time shall the application of the standard require additional service for less than two round trips

unless the ratio of seats to passengers is less than 67 to 100.

All normal intervals of the non-rush period where the traffic is not greater than 100 passengers per half hour shall receive service on the basis of 133 seats for each 100 passengers, provided that between the hours of 6 a.m. and 11 p.m. not less than a ten-minute service shall be operated except on certain divided outer ends of lines which shall receive not less than a twelve-minute service, and provided that on all lines between the hours of 11 p.m. and 1 a.m. not less than a fifteen-minute service shall be operated, and provided further that hourly service shall be operated on the principal lines from 1 a.m. to 6 a.m.

Normal intervals of the non-rush period where the traffic is greater than 450 passengers per half hour shall receive service on the basis of 110 seats for each 100 passengers.

All normal intervals of the non-rush where the traffic is greater than 100 and less than 450 passengers per half hour shall receive service upon the basis of a ratio of seats to passengers that gradually diminishes from 133 to 100, to 110 to 100.

At no time shall the peak (rush or non-rush) or transition service be less than the requirement for normal traffic in any half hour of the one hour preceding or following the peak or transition. At no time shall the transition service be greater than the rush-period peak requirement immediately preceding or following.

For one-man cars service has been furnished during the peaks of the rush period on an 80 seats per 100 pas-



The most recent type of one-man car in Milwaukee includes many features for passenger comfort and safety. The lower view shows the interior of recent one-man city cars with center lighting, wide aisles and comfortable seats

in co-operation with the Wisconsin Railroad Commission. This led to a decision to give a serious trial to the use of one-man cars on a line operating through the congested district. In undertaking this step, automatic exit doors were introduced at the rear ends of the cars, and the operator's duties were further simplified through the introduction of electric heat and other labor saving and safety devices on the cars.

In January, 1925, the Clybourn line was started with one-man operation, these being the first one-man cars in regular service through the congested business district. Today a total of 217 cars, including ten new cars just being delivered, are arranged for one-man operation and are run on the 35th Street line, 27th Street, Center, North, Clybourn, Walnut, Oakland-Delaware, Wells-Downer, and State Street routes. Five of these lines operate through the congested business district. During the rush hours, the one-man car service is augmented with three-truck trains. The net result of the greater operating efficiency which is thus made possible by one-man operation is that the public has in every instance profited through a 20 per cent increase in service, while at the same time, operators of the cars receive increased pay.

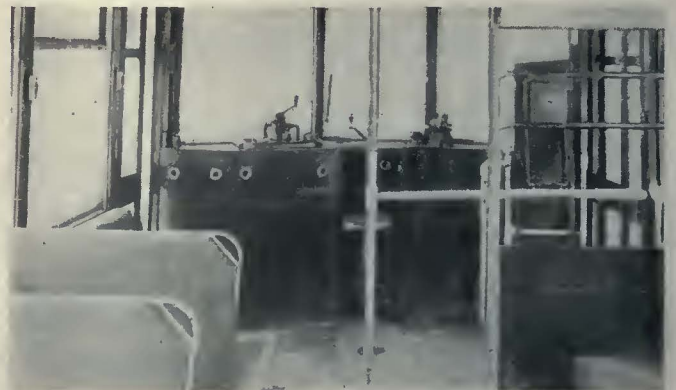
Following the demonstration of the service improve-

menters standard. No non-rush standards have been set except that it has been the practice of the company to increase the non-rush service by at least 20 per cent.

Additions and improvements to the company's equipment followed rapidly after the preliminary experimental work was done. In 1919, 60 Birney-type, one-man safety cars were purchased for service in Racine. From 1919 to 1925, a total of 165 three-truck trains were built from former double-truck bodies, and these were rapidly introduced on various lines in the city as soon as they could be put through the shops.

In April, 1920, a lot of 100 cars of the original 800 type, designed for one-man, two-man operation, were ordered from the St. Louis Car Company. These cars were all equipped with full safety car devices. In 1921, the 35th Street line was started with one-man operation, using ten of the new group of "800 type" cars. From this time until 1924, one-man operation was gradually introduced on several of Milwaukee's outlying lines. In 1923, another lot of 25 cars of similar type were purchased, and ten cars of the same general design, but shorter in over-all length, were added to the service in Racine.

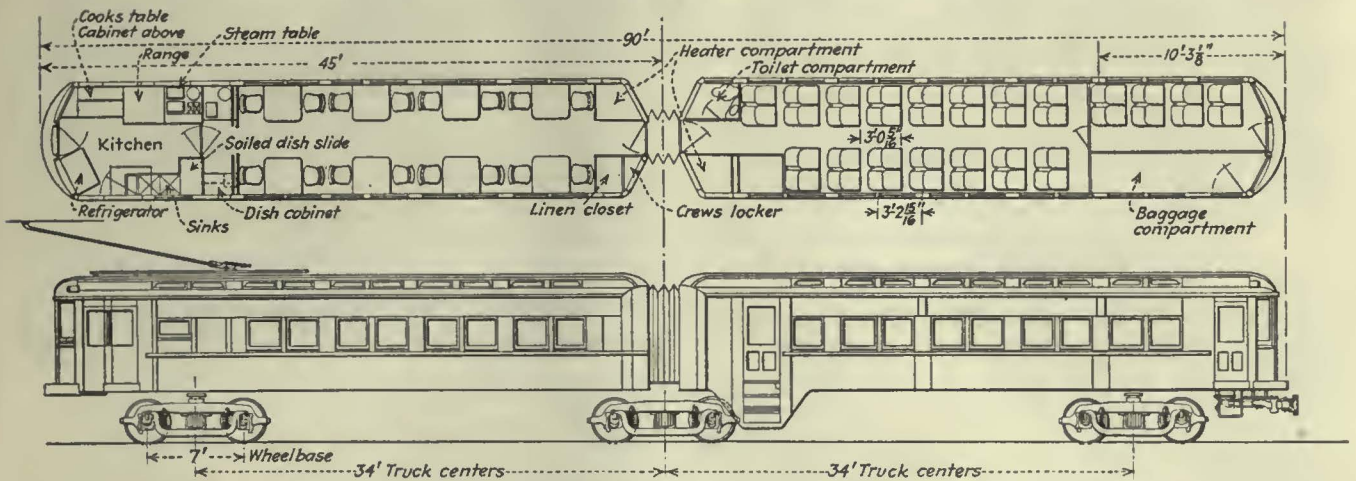
By 1924 the further extension of one-man operation on lines operating through the business district of the city became an obvious necessity to make possible desirable service improvements within the limited income available from railway operations. An investigation was started



Brake piping and controller have been inclosed on recent city cars for Milwaukee



These three-truck trains in Milwaukee have proved very efficient for handling rush-hour loads economically



Plan and elevation of new articulated dining car unit for Watertown line

ments which are made possible through one-man operation, 40 more of the "800 type" cars were purchased in 1926, which included many features for improved passenger comfort, safety and operating efficiency. These cars are equipped with fabric upholstered seats, cabinets enclosing the controllers, electric heat, center lighting, and treadle exit doors with safety control. In 1927 ten more cars of this type were purchased and have just been delivered within the past few weeks. These cars have genuine leather-covered seats.

Additional one-man equipment was provided in 1926 by rebuilding twenty cars of the 500 type. In 1927 an additional lot of twenty of these cars were put through the shop and equipped with all the convenience and safety features for one-man operation that are included in new equipment purchased by the property. At the present time there are available for service in Milwaukee

737 city cars. In addition there are 54 city cars in Racine and thirteen city cars on the Milwaukee Northern property. Including the equipment of the Milwaukee Northern, there are in addition to this city equipment, a total of 109 interurban passenger cars available.

The Milwaukee Electric Railway & Light Company was one of the pioneers among electric railway properties in the operation of buses. It extended this service rapidly as the use of buses to supplement rail lines became better understood, and today furnishes both in Milwaukee and in the entire southeastern portion of the state a completely co-ordinated service which has been carefully built up step by step to complete the company's transportation service to the city of Milwaukee and to the surrounding communities in the state.

In the fall of 1921 there were a total of thirteen buses in service. Nine of these were used for feeders to city lines and for transfer connections. Four were put on roads adjacent to interurban lines of the company to meet the incroachments of independent competitors. Following this early experience with buses operated directly as auxiliaries of the rail service in the city of Milwaukee, an independent preferred type of service at a 10-cent fare was started in the city. During this period, also, interurban bus operation was extended rapidly to meet and anticipate the demand for bus transportation in the entire area of the company's operations.



Type of car recently rebuilt for one-man operation with full safety equipment

Up to 1922, buses in use consisted of comparatively crude equipment with home-built bodies and in some cases light truck chassis with makeshift passenger bodies. During the year 1922

MILWAUKEE BUS OPERATION TYPES OF EQUIPMENT IN SERVICE

Make	Model	Type	Quantity	Seating Capacity	Weight Empty	Size and Type of Tires			Operation	Average Miles per Day per Bus	
						Front	Rear				
White	1545	Sedan	1	11	7,210	36x6	HP.	36x6	HP. Single	Intercity	30
White	1545	Sedan	7	14	8,190	36x6	HP.	36x6	HP. Single	Intercity	131
White	15	Street Car	7	12	5,650	36x6	HP.	36x6	HP. Single	Intercity 1, City 6	58
White	50	Street Car	6	18	8,300	36x6	HP.a	36x6	HP. Dual e	Intercity 4, City 2	99
White	50	Sedan	2	16	9,820	36x6	HP.	36x6	HP. Dual	Intercity	159
White	50-A	Sedan	5	20	11,200	36x6	HP.	36x6	HP. Dual	Intercity	154
Nash	2018	Street Car	1	17	7,400	36x6	HP.	40x8	HP. Single	City	54
Nash	3018	Street Car	3	17	7,400	34x5	Cush.	34x5	Cush. Dual	City	32
Fifth Avenue Coach	J	Street Car	16	20	8,900	36x6	HP.	36x6	HP. Dual	City	130
Fifth Avenue Coach	L	Double Deck	10	42	11,270	36x6	HP.	34x6	Cush. Dual	City	57
Fageol	4 Cyl.	Sedan*	5	19	8,920	36x6	HP.b	36x6	HP. Dual f	Intercity	90
Fageol	6 Cyl.	Parlor Car	13	19	11,000	36x6	HP.b	36x6	HP. Dual g	Intercity	111
Pierce-Arrow	6 Cyl.	Parlor Car	1	19	12,400	36x6	HP.	36x6	HP. Dual	Intercity	124
Packard	3-35	Sedan	1	11	6,800	36x6	HP.	36x6	HP. Single	Intercity	71
Rec.	6 Cyl.	Sedan	1	17	7,420	32x6	HP.	34x7	HP. Dual	Intercity	80
Twin Coach	6 Cyl.	Street Car	2	34	15,450	36x8	HP.	38x7	HP. Dual	City	80
Yellow Coach	Z	Street Car	8	24	11,450	36x6	HP.	36x6	HP. Dual	City	109
Yellow Coach	Z	Street Car	2	19	10,580	36x6	HP.	36x6	HP. Dual	City	82
Yellow Coach	Z	Double Deck	5	57	12,840	34x7	HP.	34x7	Cush. Dual	City	46
Yellow Coach	YZ	Street Car	30	24	11,600	38x7	HP.c	38x7	HP. Dual	Intercity 5, City 25	104
Yellow Coach	Y	Parlor Car	3	20	11,520	36x6	HP.	36x6	HP. Dual	Intercity	70
Yellow Coach	Y	Parlor Car	7	22	13,100	38x8.25	LP.	38x8.25	LP. Dual	Intercity	102
Hudson	Super six	Sedan	5	7	3,975	33x6.20	LP.d	33x6.20	LP. Single h	Intercity	64

\* One parlor car.  
 a Three have 38x8.25 LP.  
 b Two have 36x8.25 LP.  
 Three have 38x8.25 LP.

c Two have 36x6 HP.  
 d One has 34x4.50 HP.  
 e Three have 38x8.25 LP.  
 f One has 38x7 HP single.

g Two have 36x8.25 LP dual.  
 Three have 38x8.25 LP dual.  
 h One has 34x4.50 HP.

Note: HP = high-pressure tires.  
 LP = low-pressure tires.

MILWAUKEE BUS OPERATION ROUTES, MILEAGE AND ROAD CONDITIONS

Routes City Operation	Mileage One Way	Mileage per Day			Condition of Streets	Routes Intercity Operation (Continued)	Mileage One Way	Mileage per Day			Condition of Streets
		Monday to Friday	Saturday	Sunday				Monday to Friday	Saturday	Sunday	
Oklahoma Avenue	2.8	405	388	319	Concrete	Milwaukee-Janesville	74.2	148	148	148	85 per cent concrete.
Lincoln Avenue	3.6	944	973	768	Concrete	Milwaukee-Hales Corners	6.7	65	79	...	15 per cent macadam
Clement Avenue	.85	175	153	114	Concrete	Milwaukee - Madison, Highway 18	88.6	530	530	530	Concrete
Mitchell Street	1.68	485	518	362	55 per cent asphalt 45 per cent concrete	Milwaukee - Fondulac, Highway 41	62.7	627	627	690	Concrete
Lisbon Avenue	1.8	349	356	336	75 per cent concrete 25 per cent asphalt	Milwaukee - Fondulac, Highway 55	65.8	263	329	263	Concrete
Wauwatosa-North	3.57	469	432	364	Concrete	Fondulac-Green Bay	60.7	243	243	243	50 per cent concrete, 50 per cent macadam
Wauwatosa-Vliet	3.4	334	334	316	Concrete	Mayville-Theresa	5.6	56	56	56	Concrete
Green Bay Avenue	1.9	170	170	158	Concrete	Janesville-Beaver Dam	79.1	316	316	316	Concrete
Racine-Oak Park	.8	126	126	119	25 per cent brick, 25 per cent asphalt, 50 per cent concrete	Janesville-East Troy	39.4	157	157	157	80 per cent concrete, 20 per cent macadam
Wisconsin-Prospect	6.4	1,461	1,585	1,256	Asphalt	Janesville-Watertown	52.3	105	105	...	Concrete
Wisconsin-Washington	5.4	703	679	510	Asphalt	Racine-Beloit	69.1	415	415	415	Concrete
Wisconsin-Sherman	5.8	858	829	624	Asphalt	Racine-Kenosha	11.1	377	377	333	Concrete
Milwaukee-Waukesha	17.9	608	596	596	Concrete	Racine-Sturtevant	7.3	146	146	146	Concrete
Milwaukee-Oconomowoc	31.2	624	810	870	Concrete	Lake Geneva-Burlington	12.0	120	120	120	Concrete
Milwaukee-Hartford	37.4	224	224	224	Concrete	Madison-Watertown	38.1	305	305	228	85 per cent concrete, 15 per cent gravel

the number of buses operated increased from seventeen to 76. The first 10-cent city service was started with ten model L Fifth Avenue double-deck buses on the Wisconsin-Prospect route. At about the same time, ten White model 50 chassis with street car type bodies were put into interurban service. Later, five Bender sedan

bodies on model 50 White chassis were purchased for interurban service. These were followed with ten model 15 White chassis equipped with home-built bodies and used on interurban routes. Later, most of this equipment was transferred to city service. In 1923, nine single-deck type J Fifth Avenue equipments, and five double-



De luxe parlor car buses of the Wisconsin Motor Bus Lines, a subsidiary of T. M. E. R. & L. Co., carry passengers over the highways in southeastern Wisconsin



deck model Z Yellow coaches were purchased for the extension of 10-cent city lines. During this year also, ten White model 50 sedans, seven White model 15-40 sedans and three four-cylinder Fageols were added to the interurban equipment. Interurban lines were operated at this period between Milwaukee and Waukesha, Milwaukee and Oconomowoc and Milwaukee to Racine and Kenosha. A number of short feeder lines to interurban rail routes were started about this time, but most of these, together with the Milwaukee-Racine-Kenosha bus line, have since been withdrawn.

During the years 1923-1924, interurban bus lines were started from Milwaukee to Madison, the state capital; Milwaukee to Fond Du Lac, Milwaukee to Hartford, Milwaukee to Janesville, and Milwaukee to Beloit. The first group of five Fageol six-cylinder parlor-car type buses were purchased in 1924. These, together with one Pierce-Arrow parlor car, were operated in long-distance tour service. New purchases of buses for interurban service have all been of the six-cylinder parlor-car type since this time. The present fleet consists of 150 buses of which 141 are in active service. A complete summary of Milwaukee city and interurban bus routes, mileage, equipment and other statistical data is given in accompanying tabulations.

## Melbourne Trolley Becomes "Sun on Wheels" to Honor Duke of York

"HITCH your wagon to a star" is what Emerson said, but "Hitch your wagon to a duke" is the way it has been modified at Melbourne, Australia. When the Duke and Duchess of York visited that city the Melbourne and Metropolitan Tramways Board found it possible to honor the ducal couple and give the tramways favorable publicity at one and the same time.

The board was well entitled to any credit it could



Melbourne's "Sun on Wheels" to honor a duke

gain, for there were so many merrymakers on the streets that it was almost impossible to move the cars. Almost every day all trolley traffic was held up for several hours, during which period the platform wages went on as usual. On the day of the arrival all employees were paid time and one-half, with the result that the net earnings were actually 25 per cent under normal. For the ten days complete the tramway earnings were 6 per cent greater and the travel 7 per cent heavier.

If New York thinks it did well by Lindbergh, consider Melbourne's 500,000 celebrants in a city of 1,000,000 permanent population. This was the figure attained on

the day of the big parade, when 25,000 "Anzac" veterans turned out to honor the ducal visitors.

Bourke Street, Melbourne's White Way, was more gayly illuminated than usual, but one of the most striking attractions was the board's car carrying 800 colored lamps and transparencies. The lights clearly showed every detail in private suburban gardens 100 ft. away. So it is not amiss to speak of Melbourne's "Sun on Wheels." The picture tells the rest.

## Another Interurban Adds New Cars

The Kansas City, Leavenworth & Western Railway has placed four light interurban cars in service.

Latest de luxe features give cars riding appeal

FOUR new passenger cars, lighter and speedier than those now in use, and designed to appeal to the public's love of comfort and beauty as well as to permit more economical operation, have been placed in service by the Kansas City, Leavenworth & Western Railway Company, operating an interurban line between Kansas City, Mo., and Leavenworth, Kansas. The new cars were furnished by the American Car Company, St. Louis, Mo., and will be operated with one man. The change from the former plan of using two men is part of the policy of cutting down operating costs, adopted as the most effective way of meeting the heavy bus competition the company encounters.

In commenting on the new cars W. H. Holmes, vice-president of the company, said: "We believe that the peak of the depression caused by bus competition has been reached. The electric lines have a legitimate place in the transportation field and by offering the public better service and improved, modern equipment they should be able to win back some of the patronage they have lost. We realize fully, however, that what will help more than anything else is cutting operating costs to the bone and placing the interurban business on a modern basis. We cannot continue with the equipment and methods of twenty years ago."

The four new cars will meet all regular service demands of the company. Most of the present rolling stock will be disposed of, the company keeping only such old cars as are necessary for reserve. The new cars weigh 33,000 lb. each as compared to from 75,000 to 88,000 lb. for the old ones. They seat 52 persons, which is approximately the same as the old, but the passengers will be carried at a great saving in power and in maintenance-of-way.

They embody all the latest features designed to make interurban travel more comfortable and safe and to make the electric car appeal to the public's liking for beauty in common carriers. They are 45 ft., 6 in. long by 8 ft., 6 in. wide, and are equipped with four 45-hp. motors as against four 75-hp. motors on the old cars.

Wheel diameters on the new cars are 26 in. as compared to 34 in. on the old ones. The old cars have cane seats. The new ones have individual bucket-type seats, upholstered in leather, with pneumatic cushions. The new cars have rubber tile floors, all-steel bodies, exteriors painted in red with blue roof, and finished on the inside in two-tone mahogany. An indirect lighting system has concealed lamps in a panel skirting the roof of the car.



Exterior of one of the new cars of Kansas City, Leavenworth & Western Railway. The car is painted red, with cream trimming and blue roof

Light is reflected from a buff-colored, wood pulp combination dome. The roof is arched and the large windows make the new cars appear roomy.

The front vestibules are of the semi-circular type. In the rear of each car is a combination smoking and baggage compartment, capable of seating twelve persons and with a square bus-like vestibule which imparts an observation platform effect. Low stream lines prevail throughout the cars and both front and rear doors are under control of the motorman.

#### GENERAL REHABILITATION PROGRAM CARRIED OUT

The company has put more than \$100,000 into new equipment and improvements in the last year. Approximately \$25,000 was spent in repaving and repairing car tracks in the city of Leavenworth; \$10,000 in repairing roadbed and putting in new ties and rails between Kansas City and Leavenworth and more than \$5,000 in repairing and putting in new freight switches all along the line.

The new switches will give the company freight connections with the Greater Kansas City railroad switching system, known as the Outer Belt, used by all the rail-

roads centering in Kansas City, Mo., and Kansas City Kan., and their suburbs. They also provide connections with the Missouri Pacific railroad at Wolcott, between Kansas City and Leavenworth, with the industrial department of a home for the blind in Kansas City, Kan., and with the prison industries of the Kansas state penitentiary at Lansing, Kan., as well as with numerous private industries. The company will expand its freight business and hopes to increase its revenues greatly from this source.

The above figures do not include the cost of thirteen buses, purchased within the last three years to supplant the company's electric cars within the city of Leavenworth and to the United States army post at Fort Leavenworth, 6 miles away, and to the government soldiers' home, 3 miles from Leavenworth. The last of these buses were placed in service in October of last year. They enable the company to serve its patrons at these points more cheaply than could be done with the electric cars, and the buses are routed up the streets at the army post and the soldiers' home, bringing transportation nearer to the patrons at these points than was possible with the interurban cars.



Bucket type seats upholstered in leather and rubber-tiled flooring provide comfort for passengers



Rear vestibule of one of the new cars—a longitudinal seat is used here

# The Stock Book for Stabilizing Stores

Particulars are given of a simple form of stock book, based on that used on many steam railroads. It has many advantages over the use of cards

By R. A. WESTON

Special Accountant the Connecticut Company, New Haven, Conn.

STEAM railroad companies of the United States 25 or more years ago devised a form of stock book as a means of ordering materials for replacement of stock materials. The advantage of the book was that there could readily be derived from it information on what the consumption of a particular item of material had been over a period of time, so that replacement orders could be based upon the actual history of the past as to consumption. The book quickly grew in favor and is probably the best device now in use for the purpose of regulating the stock. A brief explanation of this form and how it is used may be of some interest.

In its simplest form an outline of the book is as shown

the third column by the storekeeper, who decides upon the quantity to be ordered. He is governed very largely in fixing this quantity by what the book shows is being used.

An illustration will show how he calculates this. On Jan. 1, for the item illustrated, he finds that he has 500 on hand and 300 due on order, and the book shows that during the previous year his consumption averaged 400 a month, or he has on hand and due a 60-day supply. Assume that he decided to order 300. On Feb. 1 he has 200 on hand and 600 due. Not having received any during the month, and his stock having decreased from 500 to 200, he sees that he has issued out 300 during the month. He cuts his order down in February to 200. On March 1 he finds that he has 400 on hand and 400 due. This indicates that he has issued out from Jan. 1 to March 1 the amount on hand Jan. 1 (500) plus the amount received (400) less the amount on hand March 1 (400), or the issues have amounted to 500, an average of 250 a month for that period. He cuts his March order down to 100. He could safely have omitted to order in March. On April 1 he has 550 on hand and 100 due. The consumption in three months has been 750, or an

THE A. AND B. RAILROAD COMPANY																
Description of Material	Average Monthly Consumption Previous Year	JAN			FEB			MAR			APR			December		
		On hand	Due	Order-ed	On hand	Due	Order-ad	On hand	Due	Order-ed	On hand	Due	Order-ed	On hand	Due	Order-ed
Trolley wheels 5" spec. 0234	400	500	300	300	300	600	200	400	400	100	550	100	100			

This form of stock book has many advantages over card listing

in the accompanying illustration. It is to be noted that there is no column on this form to show consumption of material or material issued. The usual form of stock ledger sheet or stock card has spaces on which all daily issues of stock from the stores are posted and permits of a perpetual inventory. It necessitates a great deal of clerical work.

The stock book here illustrated is used in the following manner. It is kept in the stock room itself and not in an office apart from the stock room. The man who physically handles the stock keeps the book. Once a month there will be prepared in the book a stock-replenishing requisition in the following manner. The storekeeper and the stock clerk will make the round of the stock room. In the first column, for the month in question, headed "On Hand," will be entered the actual quantity of the item in the bin. It will be perceived that this means an actual inventory of the stock room once a month. The bins must be mostly open shelving, with no concealing bin fronts, and the materials physically arranged in order so that they can be counted by inspection without physical handling. The unit piling system needs to be followed.

In the next column, under the word "Due," is entered the quantity previously ordered on requisitions and not yet received. This will consist of all the unchecked items in the preceding third columns, a check mark being made against the item from the receiving record when the material is received. The next entry is to be made in

average of 250 a month for the period. The storekeeper is reducing his monthly orders in order to regulate his stock to the basis of his issues. After the stock room has been gone through and all entries made in the book it is turned over to a stenographer to type up the requisition.

### ADVANTAGES SET FORTH

Some of the advantages claimed for the stock book system as here described are the following:

1. The order is based on personal inspection and inventory of what is on hand. It avoids what may be a costly mistake in ordering from a card record figure where some clerical error may have been made in posting to a card.
2. It forces an orderly and systematic arrangement of the storeroom and of piling the stock due to requiring an actual inventory monthly.
3. The psychological effect is good of determining on the quantity to order when facing the material itself and realizing its comparative costliness.
4. When thousands of items are carried in stock it is a very laborious and slow process to consult individual stock cards for such information. The stock book very much facilitates the work.

### FORM WITH MORE DETAILS FOR LARGE COMPANIES

The form of stock book here illustrated is in its simplest form and is sufficient probably for a majority of street railway storerooms, and simplicity is quite an advantage. In the form shown, however, it is good for only one year and has to be written up new each year. This can be overcome by having the description column written or printed on a narrow page separate from the rest of the page, removing the latter only, each year.

The principle of the stock book was recommended in the 1923 report of the committee on purchases and stores of the American Electric Railway Association, working in conjunction with the committee on stores accounting, and a recommended form of stock book was included in its report. This form is more elaborate and can be used for two years without rewriting. It has an additional space for showing the amount of unfilled requisitions, which is desirable in the case of a general store supplying divisional stores, but not necessary excepting for such a store. The form recommended by the committee provides for considerable additional information and permits of only seven items of material to a page of rather large size. The simpler form of book would permit of 30 to 40 items to a page of materially smaller size which is quite an advantage. It would also seem as though, with the simpler form, the figures for the calculations are more readily grasped and used. It might perhaps be said that the committee could well have included also in its report a simpler form of stock book that could be used in a majority of cases, while the larger systems would use the more elaborate form in their general storehouses. The report of the committee is referred to for detailed instructions covering the use of the book and for specifications for printing and binding.

As above stated, the system has proved its merit after more than 25 years service on steam railroads, and the opinion is ventured that the electric railways can adopt it in their storeroom practice with great advantage. It of course has to be supplemented by known conditions and work planned and in prospect, and it is the storekeeper's business to be supplied with this knowledge as well as the history of the immediate past.

## Detroit Express System Benefits Motorists

**Drivers of private automobiles and operators of trucks report big savings in time and general traffic improvement on Jefferson Avenue with express trolley system**

**D**ESIROUS of determining whether operators of private automobiles and trucks were benefiting by the combination express trolley and local bus service on Jefferson Avenue, the Traffic Survey Bureau of the Detroit Police Department sent out a number of letters requesting information relative to the use of the avenue before and after the express service was started.

Drivers of private automobiles were requested to give their average time from starting point to destination before express service was in operation, average time under present conditions and any other benefits or disadvantages. Operators of trucks or commercial vehicles were asked to list any benefits or disadvantages of the service to them and to state if any time was saved.

Practically every automobile driver who replied gave a favorable expression of opinion and reported a substantial reduction in traveling time. The time savings ranged from five minutes on a former twelve-minute run to twenty minutes on a former forty-five-minute run. The running times under the new system varied from 55 per cent to 89 per cent of the former times and averaged between 75 and 80 per cent.

Criticism of the system was scarce and concerned two unfavorable conditions: "bottlenecks" are formed at ex-

press stops by requiring traffic to go to the right of the safety zones and traffic signals are masked by the curtains on the safety zones.

A few of the replies from automobile users, typical of the large number received, are reprinted herewith:

Average Time From Home to Place of Employment in Minutes		Benefits or Disadvantages
Former Conditions	New System	
10	7	It's a great thing. I have noticed practically no jamming of cars since new system started. Practically no hold-ups.
35-40	29-30	Driving is easier and less crowded. Traffic moves faster and because there are fewer jams the accident hazard is reduced.
35	22	Fewer quick stops necessary as there are no pedestrians crossing the avenue except at car stops. I consider this express service to be the best improvement in traffic handling in Detroit.
28	23	I find that due to the non-stops the traffic moves more smoothly. General improvement. Good work.
30	24	The avenue is not so congested.
45	30	Think it a great advantage in every way.
40	30	Very much better. A big improvement and hope it is not changed back.
30	20	Much easier driving. Not so many stops and starts.
20	15	The express service has helped the motorist unquestionably.
60	45	I believe the express service has resulted in a time-saving not only to the auto owner but to people who must use street cars, buses or jitneys, as well.
12	7	Traffic moves smoothly without congestion or rush. Plenty of benefits and no disadvantages from the driver's viewpoint.
35	25	I want to endorse the new system heartily. It relieves congestion both for autos and pedestrians.
20	15	It's the best thing the city did since it took over the street railway.
25	15	Formerly used the bus but now use the street car because of a saving in time.

The truck operators who replied were as enthusiastic over the new system as were the private automobile drivers. All reported a saving in time. Many pointed out that they were able to operate more trucks and that operating costs were reduced.

Some of the comments of the operators of commercial vehicles follow:

Is Any Time Saved	Benefits or Disadvantages
A considerable amount	A noticeable speeding of traffic is a result of the express service on East Jefferson. We are pleased that it has been placed in effect.
Considerable	I find it expedites traffic and saves us money inasmuch as we can make more trips.
Yes	It appears to be safer.
Yes	It speeds up traffic and enables us to make more money by being able to carry more loads on our trucks.
Yes	Traffic isn't tied up so frequently. It saves the driver's nerves and patience.
Yes	It saves gasoline by not having to stop and start so often for the street cars.
Considerable	It saves wear and tear on the trucks by not having to stop for street cars every other block.

## Rubber Used to Reduce Noise and Vibration on Cars

**R**UBBER is being used by the Market Street Railway, San Francisco, to reduce noise and vibration in street cars. Pure rubber pads, five-eighths of an inch thick, are used to insulate the car bodies from the trucks, thereby preventing the transmission of gear and other noises to the car body itself. This idea is following out one used by automobile engineers for several years, in using pure rubber pads to insulate the engine from the frame of a motor car.

New cars will be equipped with this device when built, and old cars will be fitted up at the rate of about eight per week.

The adoption of this scheme has followed many weeks of experiments, and tests show an appreciable reduction in noise.

# Manuals of Operation and Accounting

By H. E. Jordan

Assistant Engineer Los Angeles Railway, Los Angeles, Cal.

COMPILATION and issuance of manuals of operation and accounting to each employee of the Los Angeles Railway, Los Angeles, Cal., has proved a very effective means of stabilizing the routine of its mechanical department. The primary object of these manuals is to set forth the duties, principles and practices of the department organization and certain general and specific rules for its operation, so that each member of the department may understand the requirements of his own position as well as those of the men with whom he works.

By reading these manuals, new men entering the organization learn the routine and become familiar with the requirements of their jobs in much less time than if they had it all to learn from the foremen and fellow workmen. This not only saves the time of the new men but that of the foremen and the other workmen as well. Men of lower positions may learn from the manuals the requirements and the duties of the positions above them. This gives a man a definite objective to which he may aspire, which is an incentive to an ambitious individual. Many internal conflicts and misunderstandings are avoided by having the jurisdiction of each office defined.

There are two manuals, covering organization, operation and inspection. One is for the five division carhouses that maintain the cars in regular service; the other is for the general shops that repair wrecks, do general overhauling and the work required by store and work order authorizations.



Inspection card rack located in carhouse foreman's office containing last inspection record of each car

The manual for the five division carhouses prescribes the routine rules of the operation of the carhouse organization regarding the proper handling of tools, fire-fighting drills, overtime, absence from work, etc. It sets forth the duties of the general foremen of carhouses and the duties of each office of that department branch, down to the workmen. Further it defines such terms as scrap, salvage and second-hand material, pull-in, equipment and operating failures and describes the use of certain forms that are to be used to make reports of

1928-1929		FROM _____ TO _____		Los Angeles Railway Inspection Record		CAR NO. _____																					
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BRAKE	REPAIRS	ADJUSTMENTS	REMARKS																								

Each car has a ledger sheet, size 22½x11½ in., with headings for the common items of repair or adjustment. Motor, control and overhead repairs are entered on the reverse side of this same sheet

work done. It also prescribes the time limit of each inspection and specifically tells the requirements of each inspection, from the "safety inspection" that must be made each time a car leaves the carhouse yards, regardless of the mileage made, on through the "A," "B" and "C" inspections, which vary in degree of thoroughness with respect to hours of operation.

**INSPECTION SYSTEM OUTLINED**

The inspection system which is outlined in the carhouse manual warrants a description here. A record of the number of hours operated is kept for each car by the office of the carhouse foreman, for the cars operated

tors and workmen are falling down in their work. After the workman completes the repair he notes briefly what he has done and why it was necessary on the back of the inspection card. When the next inspection is due on a car a new inspection card is placed on it and the old card is sent in to the master mechanic's office.

Each car has a large ledger sheet with headings for all of the most common items of repair or adjustment. All data are posted on these ledger sheets from the card by a clerk who enters the data under the proper heading. The difference between regular repairs and failures is indicated by the use of different colored ink. The equipment is also classified according to type, as various types

The inspection cards, individual ledger sheets and summarized data sheets are explained in the carhouse manual

No. 1. One of the six monthly inspection recapitulation sheets for posting repairs and failures of equipment. The size is 14½ x 11½ in.

No. 2. Summary sheet of repairs and failures by types of equipment, put on a mileage basis. This sheet is also 14½ x 11½ in. in size.

No. 3. Passenger car card for inspection "A." Work done by the inspector is noted on the bottom and repairs between inspections on the back. The card is 4½ x 11½ in.

out of the respective carhouses. When a car is due for an inspection it is held in by the switchmen and the proper inspection card, whether "A," "B" or "C," is placed on it, in a card holder. Each inspection is classified under headings on the card, as body, brakes, control, etc. When a repair or adjustment is made the workman makes a brief notation of the work he has done and briefly states the reason the repair or adjustment was necessary, as, for example, "Replaced P.E. arm. brg. No. 2 motor act. of worn." When the inspection is completed the inspector signs his name on the card opposite the equipment he inspected and the card is placed in an active card rack in the foreman's office. If a car has a failure while it is in service or it is necessary to do work on it for any reason, its inspection card is taken from the rack and placed in a "B.O. (bad order) car box." As the card contains the records of the previous inspection, the foreman very readily determines what inspec-

tion of car bodies, motors, etc. The data contained on the inspection card are further posted on type sheets, with headings similar to those of the individual car. This classifies all the various repairs and failures according to what they are and the type of equipment on which they occur. This record is summarized at the end of each month, all repairs and failures are put on a "miles per failure" basis and a regular formal report is made. It is evident that from such a report the relative merit of types may be readily ascertained and the particular weakness of each type of equipment made apparent.

**MANUAL FOR THE GENERAL SHOPS**

The shop manual prescribes the routine rules of operation of the general shop, defines the jurisdiction of each office and the responsibility of each position; gives the name, number and use of all mechanical department forms and practice in overhauling cars and equipment.

The company's accounting manual prescribes the general and specific rules pertaining to the charging and crediting of material and the charging of labor. The "Uniform System of Accounts for Electric Railways" prescribed by the Interstate Commerce Commission has been followed. However, some of the operating accounts have been divided into subheads to show certain segregations of cost. For example, Account 30-B represents maintenance of brakes; 30-C, car bodies; 30-T, trucks; etc. In addition to the segregation of charges by accounts, the charges are also segregated by types of equipment. The types of equipment are the same as those used in the inspection reports.

All of these costs are established monthly and are put on a cost per mile basis. However, complete written reports are made only quarterly. Three months is con-



Inspection card in holder on car to be inspected

sidered a sufficient period in which to eliminate severe fluctuations caused by an epidemic of repairs that may occur on any one type of equipment over a short period of time. The quarterly report shows the segregation between regular maintenance and general overhauling charges, summarized by types. Although the regular maintenance costs are segregated only by types of equipment, the general overhauling costs are segregated by individual cars and the detailed cost of overhauling these cars is furnished to the master mechanic's office by accounts. The combination of these two reports has eliminated the guessing or estimating of the relative merit of any type of equipment.

On a large system, where repairs are made by a large number of mechanics at several different points, it is impossible to spot many important weaknesses in the equipment unless classified summaries are made. The inspection report plainly indicates the weakness of the equipment by showing relatively large numbers of repairs and failures under the classified headings. Where these weaknesses are apparent the mechanical department makes an effort to eliminate them, and sometimes by relatively small changes effects a large reduction in operating costs, reduces equipment failures and thus betters the service. The cost report plainly indicates the most economical equipment to maintain. From it the engineering department may readily determine at what point in the life of the equipment it is economical to replace it.

It is vitally essential that every large electric railway keep records of repairs and failures. If these records are not kept up it is necessary to make special studies and investigations regarding the rumored reports of excessive failures and repairs of various types of equipment. When these studies are made, if no detailed record has been kept as the work was done, they are essentially based upon hearsay, or opinions of various workmen and foremen, which is at best a very unsatisfactory means of supporting important conclusions. We believe that it is more economical to keep a detailed record of repairs and failures, so that we may have ready reference on the actual conditions which pertain to all of our types of equipment. This record not only eliminates the necessity of making special studies and investigations but often has called to our attention certain weaknesses which had not been apparent prior to keeping this record.

## Training by Individual Instructors in Atlanta

Demonstrations given on a moving car, courses of further study available for those who desire it

**T**WO features stand out in the instruction course given to new employees by the Georgia Power Company of Atlanta. One of these is an adaptation of some of the latest university methods and is the assignment of each student to one instructor who may have several other students assigned to him but not a large number. This instructor is expected to look individually after the work of each of these students and is held individually responsible for their progress. In collegiate work this is known as the "Oxford" system.

On the Georgia Power System there are two full time instructors and 63 trainmen who have been especially trained as platform instructors, employed in teaching new platform men the way of discharging their duties. As explained, every student is assigned to some one of these instructors. During his course of study he goes to various line instructors to learn the car routes, etc., but he returns to his original preceptor for the final phases of his instruction. Before this plan was begun a student was sent to one instructor one day, to a second the next day and to a third the following day to learn different phases of the work. The result was that no one instructor was responsible for his progress and no one took any great amount of interest in it.

Largely as the result of a scientific approach to the problem, the company has found it possible to reduce the period of instruction by 25 per cent, and at the same time turn out better qualified men. This is of benefit to the company through the more efficient use of the time of the instruction course. It is of equal benefit to the students in view of the fact that they are not paid during their period of instruction. Higher standards of intelligence and character of the applicant also are being required, and it is a real testimonial to a man's physique or intelligence to be selected by the company for the position of one-man operator. It makes the man feel that the job is worth something to him after he has acquired it.

A second important feature of the training course is the instruction car illustrated on this page. It is unique

in that it is a skeleton car, at least on the inside, which can be operated over the road to teach the men the practical working of the machinery. It was remodeled from a four-motor, double-end car which had been retired from passenger service.

The flooring in the center was removed, leaving a walkway protected by a railing on each side. The line breaker is mounted above the floor and the air brake valves and piping are mounted above the center sills and painted a distinctive color. Door hinges, sprinklers and valves forming a part of the treadle step and door mechanism are exposed. The power wiring and door circuits are also exposed. The controller has a glass cover. The car is equipped with an economy meter and a voltmeter so that more intelligent instruction in power saving may be given.

A group switch in the car is controlled remotely by eight snap switches, the snap switches opening and closing

Those who finally qualify for service have the opportunity of pursuing their education further if they desire to do so. The men are encouraged to take correspondence courses relating to the public utility industry. The cost of such courses may be deducted from an employee's salary if he desires, and if he completes the course and makes a grade of 70 per cent or better the amount so deducted is refunded to him. The company also assists employees desiring to take night school or other courses, by arranging their hours of work. It was discovered a few years ago that 34 motormen could neither read nor write. Special classes for them were organized and all were given the rudiments of an education.

For the last three years the superintendent of equipment, his foremen and several of the point supervisors have attended a course in foremanship at the Georgia School of Technology. The results were so satisfactory during the first two years that in 1926 the company



This old car has been fitted out for instruction purposes. The floor has been cut away to show the operation of the machinery. The wiring, air valves and other parts are also visible

ing the unit switches in the group. The unit switches are used to demonstrate the most frequent troubles in the motor circuits, i.e., grounded armatures and fields, open circuited armatures and fields, grounded and open circuited resistances and short circuited fields and resistances.

The car is designed so that the instructor, by throwing the switches, can cause the various kinds of trouble. The student is then told how to operate the cut-out switches in the controller to clear up the trouble. After all parts of the mechanism of the car have been explained to him, the student is required to correct the various troubles and get the car in operation after the instructor has thrown it out of order.

The instruction of the men does not end with their technical training. Every man before qualifying has a talk with the safety director, who seeks to impress upon him the primary obligation of safety and his responsibility as a representative of the company. He then meets the superintendent of transportation for a personal talk. The company believes the benefit of these interviews cannot be overemphasized, as the student comes from them not only with a feeling of the importance of the job but with a knowledge that the officials, from the superintendent down, are backing him in his efforts to make good.

made arrangements for the entire supervisory force of the transportation, roadway and mechanical departments to take this course at the same technical school. The men attended on their own time and an average attendance of more than 90 per cent was maintained.

### P. R. T. Remarkable Example of Employee Participation System

THE Philadelphia Rapid Transit Company, Philadelphia, Pa., is cited as the most remarkable example in the United States of employee participation in management in a survey recently completed by the International Labor Office of the League of Nations. According to the report that company is particularly striking, "as the employees are in process of acquiring complete financial control." The 10,000 employees already hold more than one-third of \$30,000,000 of capital, giving them two directors of eight on the board of management. In conclusion, the report states that the communication of information to workers' councils and the sharing with them of some of the anxieties of management have led to a better understanding of problems of industry by the workers.

The study was made by H. B. Butler, C.B., deputy director of the International Labor Office.



# Columbus Freight Terminal Enlarged

**Steady increase of freight business made the former building inadequate. Receiving capacity has been increased 70 per cent**

**F**REIGHT-HANDLING facilities of the Columbus Interurban Terminal Company were increased considerably by the enlargement of the previously-congested terminal. An extension, 41 ft. wide and 65 ft. long, was built on the freight house and the yard capacity increased to accommodate 30 cars. The extension has permitted an increase in floor space of 65 per cent, and an increase in the receiving capacity at the door of 70 per cent.

The effect of the changes was noticed immediately by the three roads which use the terminal, the Indiana, Columbus and Eastern Traction Company; the Southern Ohio Public Service Company, and the Columbus, Delaware & Marion Electric Company. Overnight service traffic between Columbus and the cities of Springfield, Cincinnati, Dayton, Fort Wayne, Detroit and Cleveland, as well as many intermediate cities, has picked up since the changes were made, according to reports. Before the terminal was completed many complaints were received from connecting lines about congestion. Since the new terminal has been placed in service, no more complaints have been received, it is stated, and many patrons have indicated that they were highly pleased.

Prior to 1911, all freight tonnage in and out of Columbus was small as compared with that of today. However, the terminal then in use was inadequate and a new one was constructed. The new freight terminal exceeded the abandoned station many times in size and exceeded the need of that day, but the management foresaw a sufficient increase in freight business to warrant the larger building. The terminal constructed in 1911 provided ample space for the efficient handling of freight, both in and outbound, until about 1922 or 1923 when congestion became quite noticeable. With the year 1926, which was the banner freight year of the company, the terminal was found to be inadequate and congestion



Track facilities of the terminal have been increased to accommodate 30 cars



The passenger station and the adjoining flatroofed freight house are back of the transfer shed in this view

was an every-day occurrence. Often three or four cars were standing under load in the yards from 24 to 48 hours.

Completion of the enlargement of the terminal was the occasion for an inspection and "get-together" party at Columbus, Ohio, Oct. 27, attended by traffic representatives of most of the electric railway properties of Ohio, Indiana, and Michigan, shippers of Columbus, representatives of civic organizations in Columbus, and officials of the Indiana, Columbus and Eastern Traction Company, who sponsored the party. Details of this meeting were given in a news item appearing in the Dec. 24, 1927, issue of the JOURNAL.



Seventeen service doors are provided in the present terminal for inbound and outbound freight

# Buffalo Transfer Embodies New Features

## Design recently adopted to meet conditions of International Railway, including use of one-man cars and universal privileges

By P. C. SNOW  
Vice-President Globe Ticket Company

EVERY transfer system, good, bad or indifferent, must include certain essential features, which are: (1) The date the transfer is issued; (2) the route or routes to which a passenger may transfer; (3) the time when the transfer privilege expires. The care taken in presenting this information determines in large measure

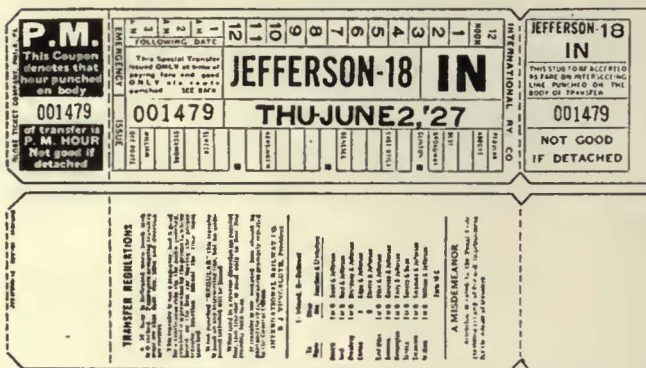
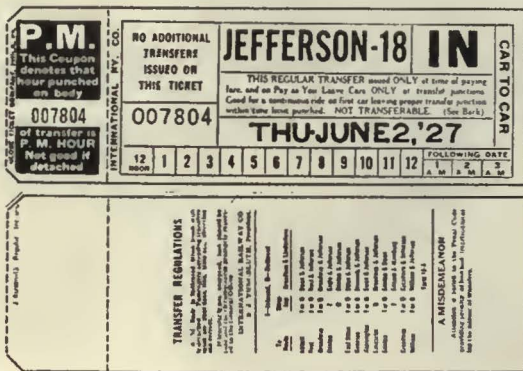
The accompanying illustrations show the two forms in use. The first or regular transfer is good on any line intersecting the issuing line, and requires no line punching. The second or special transfer is issued to cover rides requiring three or more cars. The operator punches the intersecting line, and on that line the stub is lifted, the passenger retaining the body of the transfer, which is collected on the third car. In a few rare instances riders may require four or five cars to make a journey. For these rides the issuing operator punches the word "issue." Only when this word is punched out of a special transfer does the operator of the second or later car issue a transfer on a transfer.

At the beginning of each half trip operators punch out the time, allowing a reasonable margin to cover slight delays in making connections. Thus all punching except for the unusual ride is eliminated from the line, greatly speeding the issuing of transfers. There has been a material simplification from the former transfer. This reduces the time taken by the issuing operator and makes it easy for the receiving operator to scan the transfer on acceptance. This reduction in time is essential for one-man operation, and at the same time decreases abuse given both by operators and by passengers.

The form adopted is what is known as a "line" transfer, the issuing line being indicated by color and by printing in large letters on the face of the form. The issuing date is surprinted in red on the face. On the regular form the transfer point and route are not punched, but instead inbound and outbound forms of different colors and with distinctive printing are used. On the reverse of the transfer is a list of the legitimate transfer routes and points allowed. The receiving operator has no difficulty in identifying the transfer and determining whether it is good on his line at the stop where the passenger boards and in the direction in which he is traveling.

Buffalo has adopted the hourly time limit, following the trend toward simplification. It has been found by experience that this restricts the passenger with a reasonable degree of accuracy, and it is felt that the fractional hour limit is not practicable for pay-as-you-pass and pay-leave collection, both of which were used in Buffalo when the new transfer was first employed. Buffalo cars are now 100 per cent one-man operated, and with the exception of four crosstown lines the method of fare collection is pay-enter inbound and pay-leave outbound. It is also easier for the issuing and receiving operators, particularly on one-man cars, to punch and inspect the hourly limit. As to the abuse, there is comparatively little to be lost with the hourly basis, since the average conductor is usually liberal when punching the fractional-hour transfer. The use of transfers long expired is obviated by the "P.M. coupon," which is torn off all transfers issued before noon. The difference in length and appearance is unmistakable.

Preceding the introduction of the new transfers, a series of newspaper advertisements prepared the public for the change. These advertisements illustrated both the regular and special forms of transfers, and discussed the conditions of use, telling the patron what to do to obtain the correct transfer. These were published in the daily papers for four days preceding the inauguration of the new system. Beside this, dash signs called attention to the newspaper advertising. The day the new transfers made their appearance the dash signs carried the wording, "Need a Transfer? What Lines, Please?" Bulletins in the cars also called attention to the new form.



Front and reverse of new Buffalo transfers

The regular transfer (at top) is good on one car only, while the special transfer is accepted on two cars. In a few instances additional transfers are issued.

the success or failure of the transfer system. Adherence to the basic principles involved will go a long way in cutting down, if not eliminating entirely, many of the transfer evils which long have been the bane of transportation men.

The transfer designed and laid out for the International Railway, Buffalo, N. Y., in co-operation with its transportation engineers, is an excellent example of how these results may be accomplished. The study was directed by two engineers, but the employees, including co-operative committeemen, supervisors and trainmen, had no small share in the development of the transfer. In the opinion of the writer as close to a perfect transfer for the purpose as has yet been done has resulted. Whether the idea they have worked out can be adapted satisfactorily and used by all roads throughout the country is a question. However, it has been in use in Buffalo for several months and it is reported that results have been most gratifying in every way.

# Maintenance Methods *and* Devices

## Poles Butted With Reinforced Concrete

**P**OLE butts of reinforced concrete have preserved for use almost 1,000 poles of the Pittsburg, Harmony, Butler & New Castle Railway and the Pittsburgh, Mars & Butler Railway. The method was devised by Harry Etheridge, vice-president



Two views of the completed butt, showing how the pole is bolted to the projecting tongues

and general manager of the companies. The method is economical, costing only \$4.50 per pole. It is convenient as well, since the butts can be produced without disturbing the transmission or overhead.

The reinforcing framework is constructed of open-hearth steel bars and rings. Three bars  $2 \times \frac{3}{8}$  in. and 5 ft.

3 in. long are welded to rings, as shown in the accompanying drawing. The lower ring has a diameter of 6 in. and the upper ring a diameter of  $9\frac{1}{2}$  in. Two bars  $4 \times \frac{5}{8} \times 30$  in. project from the lower framework and are welded to the lower bars just above the upper ring, as shown in the upper section view of the line drawing. They are at an angle of 90 deg. to each other and are drilled for  $\frac{7}{8}$ -in. bolts. Two bolts through each of the two tongues hold the sawed-off pole securely in position.

With the reinforcing framework in place, a specially constructed concrete form is clamped about the base. The form is 6 ft. high, of No. 16 galvanized-steel and in two halves, with flanges so the halves can be held together by external bolts. Fabric gaskets  $\frac{1}{4}$  in. thick are used between the faces. The inside diameter at the bottom is 10 in. and at the top 14 in.; so a layer of concrete approximately 2 in. thick surrounds the reinforcement in the completed butt.

A ring 3 in. wide and with a diameter of 14 in. is molded in the butt near the top and acts as an outside reinforcement. Three  $\frac{3}{8}$ -in. rods 8 in. long in chordal positions within the ring further reinforce the concrete at this point. The completed butt weighs 756 lb., of which 105 lb. is metal and 651 lb. concrete.

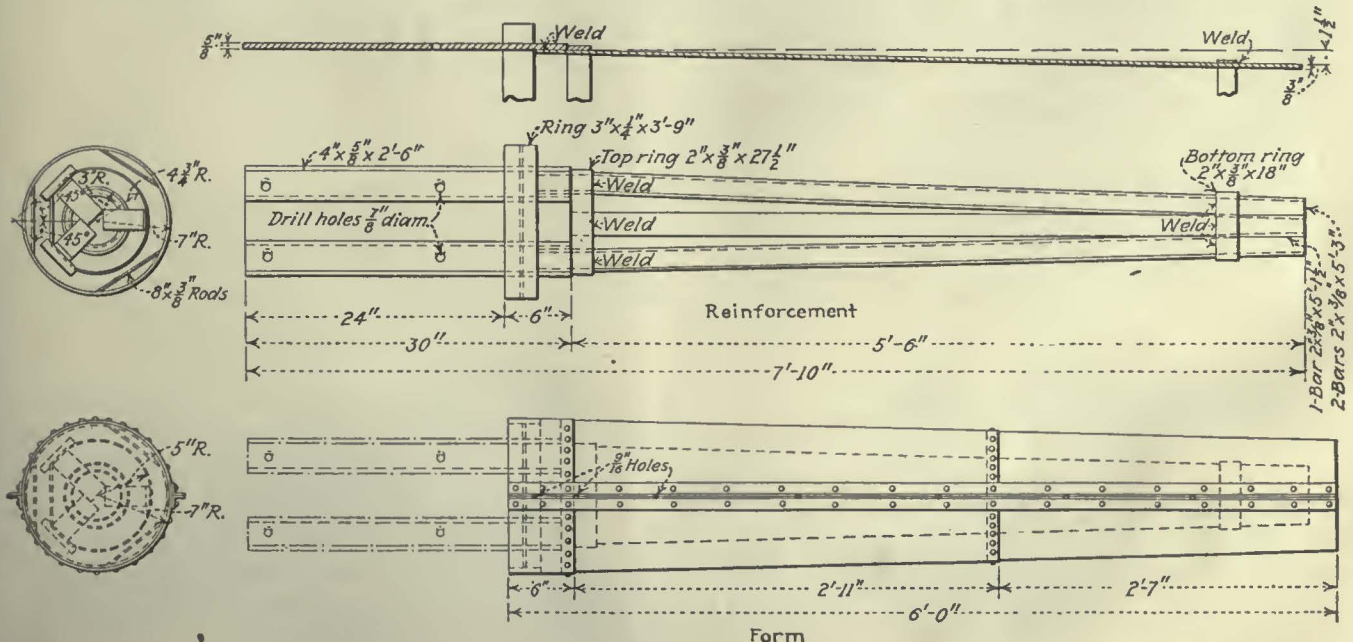
## Hydraulic Armature Jack

**R**EMOVAL and installation of armatures is done in considerably less time in the shop of the Binghamton Railway, Binghamton, N. Y., since the installation of a hydraulic



Jack in overhauling pit is an added convenience

armature jack. This jack, which is placed in the center of the pit floor, consists of an 8-in. iron pipe 6 ft. long, threaded on one end and set vertically so that about 3 ft. projects above the floor level. A 2-in. steel piston on one end and an oak plat-



The metal reinforcement and the concrete form used in the work. The upper section view shows how the tongues are welded to the lower bars

form on the other are installed in this pipe. The exposed end of the 8-in. pipe has a casting screwed on it which acts as a piston stuffing box and a support for the valve operating handle. A 2½-in. pipe connected to the city water system and the lower part of the 8-in. pipe through a ½-in. globe valve furnishes the water.

The operating handle moves in two directions. When it is thrown to the right it closes the drain valve and opens the city water valve, thereby raising the piston. When it is thrown to the left it closes the city water valve and opens the drain valve, lowering the piston. The motion of the piston can be stopped at any point desired by placing the handle in the neutral position where both valves are closed. The jack has a 5-ft. lift.



This table, with a rack in the center, facilitates the cleaning of car window sash

### Controller Segment Cutting-Off Jig

CONTROLLER segments are being made at a substantial saving in the Woodside shops of the New York & Queens County Railway, Jackson Heights, N. Y., by the use of a simple device designed by controllerman John Hilbert. Burned controller segments formerly scrapped are now salvaged by cutting off the burned portion and using the shorter segment in other parts of the controller. This device is a cutting-off jig and is designed for cutting two lengths of segments. It is made of steel in two parts, *A* and *B*, as shown in the accompanying sketch. The main body *A* has a diameter of 4 in., is 3½ in. long, and has a 6-in. flange 5/16 in. thick. Slotting of the flange radially in two places permits the entrance of a hack saw blade to cut the segment to the proper length. The

3½ in. surface of the hub is drilled and tapped for two ¼-in. machine bolts to hold the different lengths of segments. The 4-in. surface is drilled and tapped for a 3/8-in. bolt and provided with two ¼-in. dowels. The ½-in. plate, *B*, is drilled and slotted to line up with the slots, dowels, and topping in the hub of *A*. Plate *B* is designed so that the bottom edge stops above the center of *A* to allow for its application and removal without withdrawing *A* from the vise.

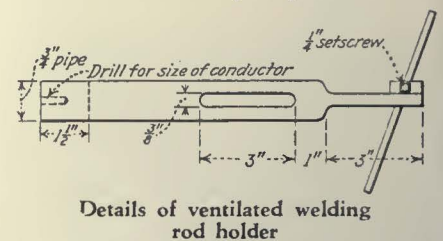
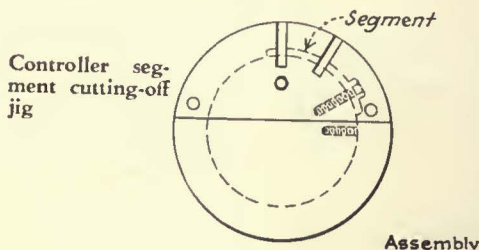
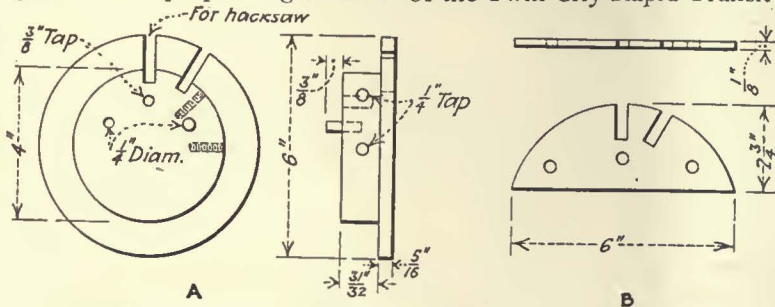
### Convenient Stand for Washing Sash

WHEN car sash are washed prior to installation, for the purpose of removing surplus paint, varnish or putty, it is often difficult to manipulate them so that all parts can be reached readily. To obviate this difficulty Joseph Gabler, foreman painter of the Twin City Rapid Transit Com-

pany at the St. Paul, Minn., shops, has designed and built the table illustrated. The bottom portion is an ordinary, sturdily built work table with drawers for holding tools and a shelf beneath. On top of this in the middle of the table there has been mounted a wooden rack, the height of which is correct for resting the sash at a convenient angle. Vertical rails make it equally suitable for smaller sash also. Notched cleats are fastened to the table top so that the sash will not slide off when rested against the central rack. Hinged extension shelves are fitted at the two ends.

### Ventilated Welding Rod Holder

HOT WELDING-ROD holders caused considerable complaint from the operators of the shop and maintenance of way departments of



the Binghamton Railway, Binghamton, N. Y., until Foreman Chapman designed a ventilated holder to eliminate the objection. It is claimed this holder can be used for any length of time under severe welding conditions and that it will remain at a temperature which will not cause discomfort to the operator's hands.

It consists of a ¾-in. pipe 16 in. long, flattened on one end for about

3 in. A rectangular block riveted to the flattened end is drilled for reception of the welding rod. A hole at right angles to this one, drilled and tapped for a  $\frac{1}{4}$ -in. setscrew, holds the welding rod in any desired position. The other end of the pipe is filled with brass to  $1\frac{1}{2}$  in. from

the end and is drilled for the conductor cable. The feature of this holder is a  $\frac{3}{8}$ -in. by 3-in. slot cut through the walls of the pipe beginning about 4 in. from the end of the holder. This hole acts as a ventilating duct or port for the dissipation of the excess heat.

## New Equipment Available

### Another Gas-Electric Bus

COMPLETION of design of a gas-electric drive motor bus has been announced by the White Company, Cleveland, Ohio. Several months of test have shown unusual power for the new equipment, it is claimed, and have demonstrated hill-climbing ability which permits severe schedules to be maintained without overheating.

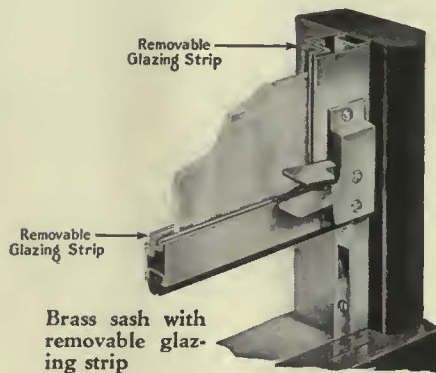
The White six-cylinder 100 hp. engine has been modified and fitted with a new chassis for gas-electric service. Electrical equipment was developed in conjunction with the General Electric Company. The six-cylinder power plant permits larger and more powerful electrical equipment than has been customary. The new bus will carry a full load of passengers on fast bus schedules over hills which would tax the capacity of ordinary equipment. Although not designed for long distance work over open routes with few stops, it is suitable for routes combining suburban and city traffic conditions, and for intercity service.

The chassis is a complete unit, making it possible to mount bodies without alterations to the chassis wiring. In addition, attention has been given to the mounting of the motors and generators so that the work of removing any unit is simple. The generator is driven by a flexible steel shaft which runs through the generator to the commutator end, the drive being taken through rubber ball joints. The two motors are connected

to the underslung worm-drive rear axle by short universal joint shafts, and the propeller shaft brakes are mounted directly on the rear end of the motor, thus forming a part of the motor design.

### Sash With Removable Strips Make Reglazing Easy

WHEN brass window sash made its appearance some years ago, there was no provision made for quick reglazing in case of glass breakage. To provide for easy reglazing,



the O. M. Edwards Company, Syracuse, New York, has announced a metal sash with removable glazing strips. With this feature, a new glass may be inserted quickly without removing the sash from the opening.

To insert a glass, sash strips are removed from the two side stiles and top rail, the new glass is placed in the opening and the strips are reinserted in their grooves. No screws are used to hold the strips in place.

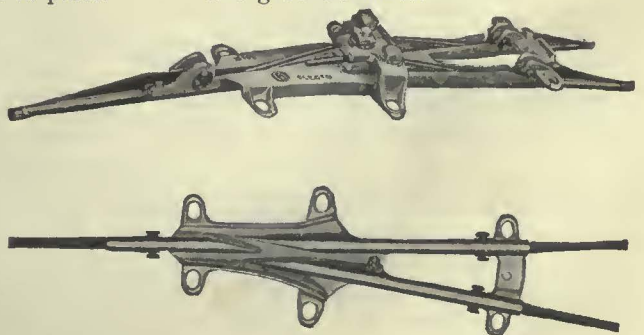
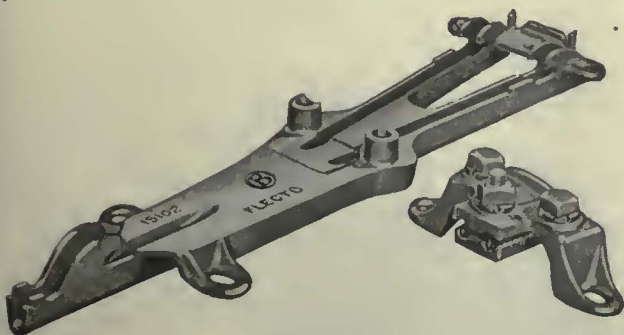
### Duplex Trolley Frog With Detachable Pan

EASE and rapidity of replacement are features of the new Duplex trolley frog now offered to the trade by the Ohio Brass Company, Mansfield, Ohio. With this construction, a detachable suspension yoke and clamp become a permanent part of the overhead and permit replacement of a frog without disturbing the supporting span or trolley wires or losing the exact location of the frog being replaced. The suspension yoke is supported by cross-span wire for which pull-off eyes are provided. To this yoke is fastened by means of a  $\frac{5}{8}$  in. bolt the clamp which holds both trolley wires in relative positions. The frog itself is in turn attached to the yoke by two  $\frac{5}{8}$  in. bolts.

To make a replacement by installing the new frog the body or pan is released by removal of two bolts and the cam tips. With a Duplex frog in position there is no need to disturb supporting span or trolley wires when renewals are made since relocation and realignment need not be considered.

Long life is assured by special runners of liberal height, narrow cross-section and with extended overlap at the center of the pan. The runners are designed primarily to guide the wheel through the frog without break in contact and without permitting the flanges to touch the pan at any point. Current collection by the wheel alone, not by the flanges, results in longer wear for both frog and wheel. The Duplex frog and body suspension yoke are made of Flecto malleable iron, hot-dip galvanized, rust resisting and brittle free. The frog body is also equipped with pull-off eyes at each end for use when necessary and with the usual O-B cam tips which insure a smooth approach and leave. The same yoke is suitable for both right and left hand frogs.

The new type frog can be furnished for the usual sizes of round and grooved wires.



New duplex trolley frog

Special runners are provided of narrow cross-section and with extended overlap at the center of the pan.

# Association Activities

## The Place of the Interview in Selection \*

By DR. S. M. SHELLOW  
Psychologist, Milwaukee Electric Railway  
& Light Company

IN OUR zealous effort to introduce scientific methods in the selection of employees, we are likely to throw out any former devices which smack at all of subjective judgment. Those of us who have succeeded the old-time employment clerk with his systematized prejudices and intuitive hunches, have laid great stress on the error of personal judgment. So much effort has been expended in trying to correct the evils of the old-time personal interview by substituting objective tests that we have often leaned over backward in trying to stand up straight.

There can be no doubt of the value of properly standardized tests in determining fitness for a job, especially when they are checked by careful and reliable follow-up reports. But the test alone is insufficient. Again and again we find individuals who lie beyond the 60 or 70 correlation coefficient who do poorly in a test but make good on the job, or do well in tests but fail on the job. We might consider them as necessary errors in any selection procedure, or we might study the causes of success and failure and see whether or not they cannot be anticipated in selection.

There are still many traits which are necessary for the proper suitability to a job which cannot be adequately measured by tests. Personality is something more than a combination of various quantities of different traits. The whole may be qualitatively different from the sum of all of its parts. Behavior cannot be predicted simply on the basis of sufficient ability. There is a great difference between the ability to do a thing well, and the interest, desire and ambition necessary to employ that ability. Attitude greatly influences performance.

The interview is designed to supplement and interpret the test results. Its value depends upon its nature. Interviews range from rapid-fire cross-examinations to the thorough and careful searching of the personality characteristic of the psychiatric clinic.

Somewhere between those two extremes lies the practical interview for selection. The nature and extent of the interview depends entirely upon the nature of the job and the qualities which need to be brought out. There are, however, certain primary functions of an interview which make it an integral part of good selection procedure.

\*Abstract of paper presented at the convention of the American Psychological Association, held at Columbus, Ohio, Dec. 28, 29 and 30, 1927.

In the first place, the interview serves as a shock absorber. It establishes a friendly relation and understanding between the examiner and the applicant. It lends a personal interest atmosphere. The initial contact should be with this purpose in view, to put the applicant at ease so that his test results may not be effected by nervousness. An easy-going conversation about the applicant's past experience, reasons for applying for the job and whatever personal information is required can quickly establish good rapport as well as provide material for later filling in the face sheet or application blank.

### THE NATURE OF THE INTERVIEW

Many important items which lead to conclusions as to the possible permanency of the applicant can be tapped during the interview.

The objection might be made that much of this information can be obtained by having the applicant fill out a blank. It is true that the information can be so obtained, but the proper introductory atmosphere for testing cannot be so established. And often much richer results are obtained in conversation about previous experience than in simply an itemized statement.

For many simple jobs, especially of a clerical nature, such an introductory interview is sufficient. The test results are paramount.

As the job becomes more complicated, the value of the interview increases. Especially is this true with jobs which require contact with the public.

There are many tests which attempt to get at "social intelligence." Some of them are helpful and suggestive, but they are indirect methods at best. Often the questions are answered as the applicant believes he is expected to answer them, and they do not represent his actual behavior in the given circumstance. The most direct measure of social ability is an actual social situation. An interview is such a situation. It is essentially the meeting of two personalities with different background and purpose. Its possibilities depend upon the training and the ingenuity of the interviewer.

A few examples may serve to illustrate the difference between testing social reactions through the interview method and through objective standardized tests. We will take the example of selecting a bus operator. The job divides itself into two major parts—ability to operate a bus and ability to deal courteously with the public. The first has

been successfully measured by objective tests. For the past five years I have tried to find adequate objective measures for the second. Several of the current tests have been tried, as well as some which I devised myself. I have gone back to the interview method. The reason will be clear after an illustration or two.

Take the question: "What would you do if a lady got on your bus and gave you a counterfeit dime?"

Objective method:

1. Put her off the bus.
2. Say nothing and give it in change to someone else.
3. Call her attention to it and ask for other money.
4. Report her to the police.

This question can be answered by checking any one of the four statements. The possibilities of behavior are circumscribed. They include only four ways out. Chance operates. Take this same situation in an interview.

*Question:* What would you do if a lady boarded your bus and gave you a counterfeit dime?

*Answer:* I would not take it.

*Question:* What would you say?

*Answer:* I'd tell her it wasn't no good, and ask her for another one. (Note incorrect English—need for class in Practical English.)

*Question:* Suppose she was very much surprised when you told her it was no good and looked into her purse to get another one, and that was all she had?

*Answer:* Well, she'd have to get off.

*Question:* How would she get home?

*Answer:* That's not my business, she has to pay or get off. I couldn't let her ride for nothing.

Now why does he make this decision? Is it because he thinks it is what is expected of him, and he wants to make a good impression? Or would he actually put the lady off? Let us push it a little further.

*Question:* How do you think she would feel toward the company if you put her off a bus because you said her dime was not good?

*Answer:* Well, I guess she wouldn't like it.

*Question:* Part of your job is to get along nicely and make friends for the company. Couldn't you think of some other way to handle that situation?

*Answer:* Well, I could let her ride then.

*Question:* That isn't allowed. You'd lose your job if you permitted anyone to ride without a fare.

*Answer:* Well, I guess I could loan her a dime then, and she could pay me back.

The result of this interview shows that the applicant is trainable. He can be made to appreciate good public relations.

Other hypothetical situations bring out other characteristics. Hot temper, willingness to fight, impudence, all of these often creep through unguarded.

In a paper test they might easily be covered up.

The value lies in the elasticity. The questions are constantly shaped to bring out the attitude of the applicant. It is obvious that in order to gain results, the interviewer must be familiar with such psychological process as suggestibility, defense mechanism and the like. A background of clinical experience is extremely helpful.

CHECKING RESULTS

It is quite possible, and indeed often happens, that an applicant may have sufficient ability to pass the objective tests but lacks the proper attitude or personality for the particular job. It is the function of the interview to supplement the test results. Many an applicant has been rejected on the basis of the interview.

But interviews must also lend themselves to verification through follow-up record. It is possible so to record the interview results that follow-up forms may be designed to correlate with them. For example, in the case of public service, such expressions as these might appear on the follow-up record sheet which is sent to be checked by the department head or supervisor:

1. Actively courteous (makes a distinct effort to bring out good public relations).
2. Passively courteous (answers questions courteously, but does not take initiative).
3. Apathetic (has shown little tendency toward courtesy, though not actively discourteous).
4. Actively discourteous (has had complaints).

In recording the results of the interview, the same phases can be used—and later checked against the follow-up reports. Verification and disagreement serve to guide the interviewer in the future.

In the present state of objective selection procedure, we cannot rely entirely on test results. The careful observation of an intelligent and trained interviewer is invaluable in interpreting test results in the light of the particular individual in question, as well as venturing at a prediction of future success.

Group Meetings Stressed in Oklahoma Meeting

GROUP meetings will be stressed in the tenth annual convention of the Oklahoma Utilities Association at the Mayo Hotel, Tulsa, March 13, 14 and 15, according to E. F. McKay, manager of the association and chairman of the convention committee. Seven groups will hold separate meetings during the afternoons, and the general sessions will be held during the mornings. The groups will be the telephone, electric, gas, electric railway, public relations, manufacturers, suppliers and womens' committees. Papers and addresses throwing light on various operating and public relations problems will be presented to each group.

COMING MEETINGS  
OF  
**Electric Railway and Allied Associations**

March 6-8—American Railway Engineering Association, annual convention and exhibit, Chicago, Ill.

March 13-15—Oklahoma Utilities Association, annual convention, Tulsa, Okla.

March 14-15—Illinois Electric Railway Association, Springfield, Ill.

March 21-22—Central Electric Traffic Association, Seelbach Hotel, Louisville, Ky.

March 23—Maryland Utilities Association, annual meeting, Emerson Hotel, Baltimore, Md.

March 30—Executive Committee American Electric Railway Association, 292 Madison Avenue, 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 6-12—Union Internationale de Tramways, de Chemins de Fer d'Interet Local et de Transports Publics Automobiles, biennial meeting, Rome, Italy.

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.

SEPT. 22-28, 1928

American Electric Railway Association, 47th. annual convention and exhibit, Cleveland, Ohio.

Indiana Utility Association Reorganizing

SINCE Oct. 1 the Indiana Public Utility Association has been in the process of reorganization. The old information bulletins have been stopped and a new information bulletin will be established early in 1928.

During 1928, according to an official bulletin, the Indiana Public Utility Association by its acts and its viewpoint will endeavor to be one of the most active and influential business and industrial associations of Indiana. To this

end committees to direct the various activities of the association have been organized and are working. Particularly active since Nov. 1 has been the tax committee. H. S. Morse, of the Indianapolis Water Company, is chairman. The committee already has taken part in the general effort being made in this state to study the taxing situation. Mr. Morse takes a stand for a more scientific taxation system and has pledged the support of the association toward every effort for tax honesty and equity.

Ernest Van Arsdel, president Interstate Public Service Company, has been appointed chairman of the association's advertising committee. C. L. Kirk is now chairman of the association's committee on membership and finance.

American Association News

Electric Railway Finance

NEW car financing was the principle subject of discussion at the organization meeting of the committee on electric railway finance, held at association headquarters in New York on Feb. 24. Those present included the following: Luke C. Bradley, chairman; J. G. Barry, S. M. Curwen, P. W. Winslow, E. A. Tuson, representing Percy S. Young, J. W. Welsh, J. A. Miller, Jr., and Charles Gordon.

The committee devoted its attention to determination of the factors which affect the ability of electric railways to finance new car purchases out of earnings. Chairman Bradley held that the advantages of new cars have been demonstrated on many properties, but that the problem of financing such purchases out of earnings is a difficult one for some properties. Since the restricted credit of electric railways, attributable in many instances to unwieldy financial structures, stands in the way of securing capital for the purchase of new equipment, he felt that acceleration of the industry's recovery is contingent on devising means to make it possible to finance such equipment out of earnings. The experience of properties that have obtained new cars shows that they permit reduction of operating expenses and stimulate improvement of the many factors in railway operation ranging from public and employee relations to volume of riding.

Based upon this preliminary discussion the committee decided to devote its attention to the problem of encouraging the purchase of new cars out of earnings. This program was adopted on the assumption that some properties do not find it practicable to finance new car purchases out of earnings on the present customary terms. It was agreed to undertake the study of several typical properties to determine the basis on which new equipment could be financed and to investigate the possibility of broadening existing facilities for handling equipment trust obligations.

# News of the Industry

## Fare Changes Sought in Green Bay

Permission to increase the price of strip tickets to six for 50 cents and to abolish the city ride book with the cash fares remaining the same will be sought by the Wisconsin Public Service Corporation, Green Bay, Wis., from the Wisconsin Railroad Commission. The company now charges a 10-cent cash fare, and sells strip tickets four for 25 cents, and city books containing tickets for \$2.50. On the interurban lines zone tickets are sold in 40-ticket books at \$3 a book, and permission is asked to increase the price to \$4 per zone book of 40 tickets each.

Figures accompanying the petition indicate that the deficit on both the city and interurban line was \$279,824 in 1926, and \$185,808 from Jan. 1 to Aug. 31, 1927. It is expected the new rates will reduce the deficit to \$209,018 or to the rate of \$.069 cents per passenger carried.

The company will also request permission to discontinue the fast freight service now offered over the interurban line between Green Bay and Kaukauna, which is being operated at a loss.

## Appeal in Denver Case Refused

The United States Circuit Court of Appeals refuses to reopen the case of the city of Denver, Col., vs. the Denver Tramway, the court having ruled that the tramway has a "perpetual franchise" under the grant of 1885-1886. However, the court changes the fare stipulation, agreeing with the lower court that the company is entitled to charge a fare sufficient to net 7½ per cent upon a valuation of \$23,514,769. It is said that the city will take the case to the United States Supreme Court, despite the fact that the Supreme Court refused in January, 1927, to take jurisdiction.

## Hocker Line Restoration Successful

Service on the Hocker electric line between Kansas City, Mo., and Rose Hill, Kan., will be restored, according to an agreement reached by the Kansas City Public Service Company and the Sonken-Galamba Corporation, which purchased the line for junking.

A reorganized company, known as the Kansas City, Merriam & Shawnee Electric Railway, in which ownership of the line will be vested, will be formed, and \$35,000 in bonds reissued to finance the rehabilitation. W. K. Paul, former manager of the line, will be the manager of the new concern. The Kansas Public Service Company

will subscribe to \$15,000 of the bonds, the Sonken-Galamba Corporation to \$16,000, and \$4,000 will remain in the treasury of the company. Preferred stock will be issued to patrons of the line who subscribed \$10,000. The residents of the vicinity have subscribed more than the \$10,000 quota as assigned to them, following a series of meetings in the towns to be served. The money will go to improvements. The special committee representing the citizens and railway officials are working on a plan to sell the bonds. It is said contracts will be let by March 12 and operation of the line started April 1.

The Kansas City Public Service Company will operate the cars on the line, which will serve the citizens of Kansas City, Shawnee, Kan., Merriam, Kan., South Park, and smaller rural communities. It will receive compensation of 4 cents per car-mile and 2 cents a kilowatt-hour for power. Five to 7 miles of the track will be replaced.

A freight connection with the Frisco Railroad is to be sought by the operators of the Hocker electric line. In addition to passenger service from the west limits of Rosedale to Rose Hill, a mile west of Shawnee, the reorganization will operate a freight car over the line.

## Jitneys Die Hard in Detroit

More court actions and delays. Review of recent proceedings. Corporation Counsel Wilcox claims jitneys can establish feeder lines

**F**URTHER delay in ousting the jitneys from Detroit's main traffic arteries was won by counsel for the jitney drivers' associations when Circuit Judge Clyde I. Webster agreed to analyze the validity of the city ordinance against the jitneys. Edward N. Barnard, attorney for the jitney associations, argued that neither the Michigan Supreme Court nor the United States Supreme Court had declared the jitney ordinance valid and contended that the state court had found the measure valid only "as to the objections offered" to it in the case brought before it. Mr. Barnard further contended that the higher court had seen the ordinance was invalid in other respects than the objections brought before it.

The action was taken in a hearing on the motion of the corporation counsel to dissolve the temporary injunction issued in July by Judge Dingeman restraining the city from interfering with the operation of the jitneys. The motion was filed in December in an effort to remove the last legal barrier preventing the enforcement of the ordinance to regulate the jitneys.

The Council later voted unanimously to back Clarence E. Wilcox, corporation counsel, in his decision to carry an appeal to the Supreme Court.

In connection with this matter the corporation counsel's office won another point in the city's fight against the jitneys when the State Supreme Court on Feb. 15 issued an order requiring Judge Webster to defend his injunction of Jan. 31 which restrains the city from enforcing the jitney ordinance. The State Supreme Court granted the city's petition for leave to appeal from Judge Webster's denial of the motion by the

city to dismiss the bill of complaint filed by the jitney interests.

In their petitions the corporation counsel and his assistant pointed out that the jitneys are starting on their fifth case, the other four having been decided adversely and one having been carried to the Michigan Supreme Court and to the United States Supreme Court. The corporation counsel contends that further to prevent the public authorities from exercising their legal functions would invade the rights of the people of Detroit, contrary to the public peace, good order and well-being of the community.

The City Council declined to hear an ordinance submitted by counsel for the jitney drivers' associations, intended as a substitute for the existing regulatory ordinance which the city has been seeking to uphold. Corporation Counsel Wilcox, to whom the substitute ordinance was referred, recently advised the Council against rescinding the present ordinance and passing a substitute. Mr. Wilcox feels that the fight is virtually won, and that the Supreme Court will vacate the circuit court injunction, but that if a new ordinance were passed, its validity could be questioned and carried through the same court procedure that followed the city's attempt to enforce the original ordinance.

Under the terms of the present measure the jitneys are not barred from the streets, but the ordinance prevents them from operating on certain main arteries in direct competition with the Department of Street Railways. The Council was informed by Mr. Wilcox that the jitneys, under the present ordinance, could establish feeder routes that are needed in the outskirts of the city.



### Pass Restored in Youngstown

A plan whereby patrons can ride the cars of the Youngstown Municipal Railway, Youngstown, Ohio, for a whole week for \$1.50 was put into effect on Feb. 26. No limit is placed on the number of rides, and the pass is good from midnight Saturday till midnight the following Saturday.

In order that the public might thoroughly understand the new weekly-pass plan, the company is giving full particulars through newspaper advertising which will be continued indefinitely.

The restoration of the weekly pass was decided upon when the 10-cent cash fare schedule was recently approved. This schedule calls for 10 cents on both buses and cars, a no transfer charge, six tickets for 50 cents and a weekly pass for \$1.50. The City Council recommended an eight weeks' trial of the new fares. The old rates were 8 cents cash, seven tickets for 50 cents with a 1-cent transfer charge.

### City Against Sacramento Increase

City Attorney Robert L. Shinn plans to renew his attack on the application of the Pacific Gas & Electric Company to increase the fares on its railway lines in Sacramento, Cal., to 7 cents. The hearing on the proposal is now before the State Railroad Commission. The Central California Traction Company's application for a 7-cent fare on its Colonial Heights line will also be considered. This company, however, is willing to stipulate that it will accept whatever rate is fixed for the Pacific Gas & Electric Company's lines.

### Peoria Council Wants Monthly Permit System Restored

The Peoria, Ill., City Council will seek reversal of the Illinois Commerce Commission order which authorizes the Illinois Power & Light Corporation to abolish its monthly permit system, by which passengers were carried on the Peoria city lines for a nickel, and establish a fare of three tokens for a quarter. The 10-cent basic fare remains. The railway was denied the right to establish a 1-cent transfer charge. City authorities claim that about 7,000 50-cent monthly cards are issued during the summer season and 8,000 in winter, with the average holder using the card twice a day 25 days a month.

### Modification of Fare Order Sought

The Johnson City Traction Company, Johnson City, Tenn., has petitioned the Tennessee Railroad & Public Utilities Commission for a modification of its order of Jan. 4, 1927, allowing the company to charge a 7-cent fare instead of 5 cents on condition that the extra revenue would be used in the immedi-

ate purchase of four one-man cars, and making other improvements to equipment. The company says that two of the cars have been purchased and that other conditions of the order have been partially met, but that the company is without funds to meet its current expenses. It is asking the commission to make it optional with the company as to when additional cars shall be purchased.

### President Mahon on State of Employment

Lack of work among electric railway employees throughout the country indicates a generally widespread unemployment among all classes of workers in the view of W. D. Mahon, president of the Amalgamated Association. Mr. Mahon was in Washington for a conference with American Federation of Labor officials on the subject.

The federation has just compiled data showing a sharp increase in the number of union men out of work. Unemployment of the members of trade unions averaged 13.8 per cent in the last three months of 1927. The percentage had increased during the beginning of January to 17.8 per cent and preliminary figures for February indicate an increase even above the January figures.

The percentages of figures of unemployment for those of the 23 cities not already listed are as follows, the periods given being from October to December, 1927, and the month of January, 1928:

Atlanta, 8.7, 9.7; Birmingham, 12.3, 16.6; Boston, 17.8, 19.6; Buffalo, 12.3, 26.7; Cincinnati, 12, 18.6; Cleveland, 16.6, 33.8; Denver, 19.4, 21.3; Detroit, 21, 32.3; Jersey City, 12.4, 21.6; Los Angeles, 16.2, 22.7; Milwaukee, 7.3, 9.8; Minneapolis, 8.1, 11.6; Omaha, 14.7, 26; Philadelphia, 14.3, 30.6; Pittsburgh, 15.1, 17.6; San Antonio, 4, 9; San Francisco, 11.7, 14.3; St. Louis, 9.4, 12.5; Seattle, 10, 11.3; Washington, 9.3, 13.

Mr. Mahon is reported to have said that crews in nearly every city of the country were alternating in voluntary time off, taking a full day in many cities to keep a maximum number employed. A drop in street car traffic, he said, always reflected other unemployment. He cited the recent situation in Detroit when 82 train crews were laid off as a result of the shutdown of the Ford factory.

### Rapid Transit Survey Bill in St. Louis

A bill establishing a rapid transit commission for St. Louis, Mo., was presented to the Board of Aldermen on Feb. 24 by Alderman Samuel Wimer, chairman of the special aldermanic committee on rapid transit. The measure calls for an appropriation of \$25,000 for survey purposes. The commission would be composed of the Mayor, president of the Board of Public Service, a member of the Board of Aldermen, an engineer and three other citizens.

### Baltimore Company Does a Real Service

A big hit has been made with an easy guide to new street names and car lines by the United Railways & Electric Company, Baltimore, Md. Recently the city authorities changed the names of approximately 900 streets, and the public has been more or less confused as a result. The guide issued by the United contains 46 pages and gives the new name of each street, its location, the section of the city, the car line nearest it and the old name. A cross index under the old name also is given.

About 20,000 of the guides were issued by the railway and are being distributed without charge. They are in great demand. The company mailed about 4,000 of the booklets to the individual members of the Baltimore Association of Commerce. As a result hundreds of letters have been received in which the company is praised for its move to help the public. A street car directory issued by the company was referred to in the JOURNAL for Feb. 11, page 254.

### Sentence Served, Indianapolis Strike Organizers Leave Jail

Robert B. Armstrong and John M. Parker, who organized the strike in 1926 in Indianapolis, have been released from jail, where they served 90-day sentences for violation of a strike injunction issued by Judge Robert C. Baltzell, federal judge. They expect to be called before the United States Senate judiciary committee at its investigation of the anti-strike injunction issued by the court. The committee decided to call counsel for the Amalgamated Association together with officials of the Indianapolis Street Railway.

### Would Extend Subway in Rochester

Extension of the Rochester, N. Y., subway in the bed of the abandoned Erie Canal is already being planned although the line has been in operation less than three months. The City Planning Commission has under consideration the extension of Broad Street, the overhead street now covering the subway in the center of the city from South Avenue to Oak Street. This plan would take the Park-Dewey surface trolley cars off the streets through the congested part of the city by diverting them by a ramp into the subway spur at Chestnut Street. The extension of Broad Street would necessitate razing of many large buildings in the downtown area and would involve great cost.

The subway railroad, built by the city at the cost of \$12,000,000 and operated by the New York State Railways under a three-year service-at-cost contract, has not yet been put into full operation on high-speed schedules as proposed, but patronage is exceeding the hopes of the city and railway officials.

## Strike Talk Revived

Correspondence of Mayor Walker to President Hedley of Interborough Indicates Critical Situation

FRANK HEDLEY, president of the Interborough Rapid Transit Company, New York, has reiterated the stand that its contract with the Brotherhood of Interborough Rapid Transit Company Employees makes it impossible for it to employ any members of the Amalgamated or to reinstate 23 members of that union which it has discharged because of that membership.

The letter in which this attitude was rephrased was made public shortly after Patrick J. Connolly, president of the Brotherhood, had announced that that organization would strike if the men dismissed for Amalgamated membership were re-employed. Mr. Connolly's statement follows:

Nine-tenths of the 13,000 employees are loyal members of the Brotherhood and want to be left alone. We are not fighting any outside labor organization but they are apparently fighting with us. We have an agreement with the I. R. T. and we are going to insist that the Interborough live up to this agreement. We ourselves are going to live up to our agreement with the Interborough.

Our agreement with this company requires that the I. R. T. must employ only those who are members of the Brotherhood. We will not tolerate Amalgamated sympathizers in this organization.

We had a meeting this morning and were instructed to see that none of the 23 members discharged be reinstated. We have been running this road since 1916 and we are not striking or tying up any railroads or threatening or causing any trouble.

In his letter to the Mayor Mr. Hedley restated his desire to avoid a strike. It was made in reply to a request from the Mayor that a representative of the company confer with the Mayor in relation to the demand of the Amalgamated organizers that certain Interborough employees who had been expelled from their Brotherhood be restored to their jobs by the company. The request was first submitted to the general officers of the Brotherhood for their consideration. Mr. Hedley said:

The management has been informed by the officers of the Brotherhood that the Brotherhood expects the management to live up to its agreement with the Brotherhood and not to retain in its employ any men who have been expelled from the Brotherhood. The Brotherhood officers request that they have a meeting with you so that their side of the matter may be presented to you. In case you care to arrange such meeting your office will find the Brotherhood officers ready to call upon you at your convenience.

The last thing which this company desires is a strike. No matter what the outcome, it may result in bankruptcy. It certainly will greatly inconvenience the public even if as perfect order be maintained by the Police Department as was done during the strike of 1926. But as you were advised last summer, the management cannot operate efficiently unless its operating forces are a harmonious body of loyal men.

This company operates the safest railroad in the world. With the exception of small groups of men scattered throughout the various branches of our organization

who are affiliated with the Amalgamated Association in violation of their pledges to their Brotherhood and of their promises to the company, we have an efficient, loyal, satisfied and harmonious body of men. They constitute nine-tenths of our 13,000 employees, if not more.

They have repeatedly informed the management that they desire to be let alone by the Amalgamated members and sympathizers. Quarrels and vilification back and forth would be rife if this property were partly Amalgamated and partly Interborough Brotherhood. It must be one or the other in the interest of safe and efficient operation. Therefore the management must stand by its agreement with the great mass of loyal employees and discharge all others when so requested by the Brotherhood and decline to reinstate disloyal employees who have been expelled by their Brotherhood. By standing with more than 90 per cent of our loyal men we would seem to be able to render better service to the public and perhaps as well thereby have a better chance of avoiding bankruptcy.

Your good offices are earnestly requested to persuade the Amalgamated Association to refrain from officially calling a strike and also from taking such action as will result in a so-called outlaw strike where it will be claimed that the men got beyond their control. No body of men will go out on strike without indirect assurances of support from the Amalgamated.

## Discussion of Chicago Bills Put Over

Samuel Insull, recently the target of innuendo and intimation in connection with his attempt to bring chaos out of the Chicago transportation muddle, has served notice that first he will withdraw from all effort to bring about a merger of the various properties if attacks upon him continue, and secondly, that the recent request for a higher elevated railroad fare was to render relief to the west side, declaring that whether better service is to be granted that section rests entirely with the politicians.

He covered the two points of just why he is in the railway situation, and why an increase in rapid transit fares has been asked, and summed up his answer in an emphatic and categorical denial that there ever was any "deal" between him and the politicians.

Meanwhile termination of all discussion on the local railway bills has been voted by the sub-committee of the City Council's committee on local transportation until after the primaries on April 10.

## Freight Service Contracts for Rochester Subway Signed

Three steam railroads entering Rochester, N. Y., have signed contracts with the New York State Railways whereby the latter will operate freight service over the new municipally built subway railroad in the bed of the abandoned Erie Canal in the city. The latest railroad to sign is the New York Central which handles 80 per cent of Rochester's rail freight, it is estimated. The Buffalo, Rochester & Pittsburgh and the Lehigh Valley previously had signed agreements with the New York State Railways, leaving the Erie and the

Pennsylvania the only ones yet to come into the fold.

Installation of the signal system is completed and reballasting of the road bed and straightening of curves remain to be done before the new line can install high-speed service and all interurban lines entering the city can be diverted to the subway.

## Strike Averted in Memphis

Although a resolution had been approved looking toward a strike of the employees of the Memphis Street Railway, Memphis, Tenn., on March 1 a strike cancellation order was issued following the naming of W. A. Ransom, Gayoso Umber Company, as third member of the arbitration board. Mayor Overton's assistance was instrumental in deferring this drastic action. He suggested that a new contract be drawn up following the termination of the present one on March 31.

Differences between the company and the employees of the Memphis Street Railway have been widening since early last year when the men set forth their demands for an increase. Under the contract which expired on April 1, 1927, the scale per hour is: first year men, 47½ cents; second year men, 52½ cents, and third year men and older 57½ cents. The company, on the other hand, sought a reduction of 11 cents an hour. Although two arbitrators were selected, namely A. B. Gallo representing the men and F. N. Fisher representing the company, they have been deadlocked over the third.

## Nashville Fetes Old-Timers

Old timers of the Nashville Railway & Light Company, Nashville, Tenn., gathered at the Chamber of Commerce Building for their annual banquet on Feb. 1. It was a meeting of the company's Twenty-Year Honor Club which numbers more than 90 men. Eight more employees were scheduled to receive their twenty-year service stripes.

## Viaduct Service Resumed in Kansas City

Cars of the Kansas City Public Service Company, Kansas City, Mo., are running through the old Eighth Street tunnel and over the reconstructed elevated road making regular transportation service available again to the central industrial district, where a temporary system has existed since the abandonment of the elevated line six years ago. The resumption of elevated road service saves most of the workers from fifteen minutes to half an hour in getting to work and dispenses with transferring to reach their places of employment. Resumption of service caused the company to discontinue one line—the Minnesota-Argentine line, although it was announced that the route would be virtually duplicated by the new Indiana-Chelsea line. Rerouting was also made necessary.

### Another Fare Hearing in New York on March 5

Federal Judge William Bondy has granted an extension of time to March 5 to attorneys for the city of New York and the Transit Commission to file their reply and briefs to the Interborough Rapid Transit Company in connection with the proceedings under which that company seeks to put a 7-cent fare into effect on its rapid transit lines. This was done by agreement of both sides and also because of the illness of Samuel Untermyer of counsel for the city. This automatically extends the time of the restraining order which will prevent any increase in fare on the Interborough Rapid Transit Company's lines before March 14.

### One-Man Cars Make Safety Record in Rochester

On the Rochester, N. Y., lines of the New York State Railways, January accidents in which one-man cars were involved averaged only half of the number in which two-men cars were participants, based on mileage. Leon R. Brown, safety director of the railways, so announced at a meeting at which the safety banner for January was awarded.

The State Street division won the coveted flag with a low average of one accident for every 8,729 miles traveled. This division, of which F. F. Livernash is superintendent, covers more miles than either of its competitors, the Portland and Main divisions.

The monthly competition is part of Director Brown's campaign to reduce street car accidents in Rochester to the minimum and has stimulated much interest among the employees. The meetings at which awards are made are well attended and are addressed by a prominent speaker on some phase of safety work.

### Competition Keen in Salt Lake City Safety Contest

Much interest is being displayed by trainmen of the Utah Light & Traction Company, Salt Lake City, Utah, in a safety contest which is now being conducted by that company. Some time ago the seniority list was divided into three teams, which were named the Red, White and Blue teams with a captain over each. The contest runs for alternate periods of 30 days. For example, it was conducted during January, and will be resumed again during March, May, and continued in this manner. At the end of each 30-day period the winning team (the one which has the fewest accidents) is given recognition in some form of entertainment.

A simple set of rules has been placed in effect. Each accident counts one point against the team whose member was involved, the failure of a contestant to report an accident costs his team five points, while a misleading report counts five against the team involved. Each

team member wears a button signifying his membership in one of the three teams, and a great deal of intense interest has been developed among the men, with a remarkable degree of friendly rivalry.

The White team won the January contest, with a record of eighteen accidents as against twenty for the Reds and 25 for the Blues. These, of course, include minor accidents, regardless of their degree of seriousness.

### It's No Longer Only a Street Car

"THEY never come back" may have its application to prizefighters and opera singers but certainly not to street cars. They are back on the streets and look better for their period of depression and neglect. Its everybody's business to see the *Nation's Business* for March, 1928, and read what Raymond Willoughby has to say about the new vision of the electric railway industry. "Right Up Front, Please!" is a complete picture of the untiring efforts at solving the operating, manufacturing and employee problems inherent in and incident to the transportation business. The writer had recourse to the analysis of the American Electric Railway Association and to the *ELECTRIC RAILWAY JOURNAL* for certain data on operating statistics.

### Taxi War Hurts Seattle Trolleys

Two proposals are to be laid before the City Council of Seattle, Wash., for eliminating taxicab competition which, with its cut-rate fares, is causing losses to the Municipal Railway. One plan will provide for the operation of taxicab companies on a franchise basis. The other plan will provide for a rigid system of licensing. T. J. L. Kennedy, corporation counsel, has not given an opinion as to what legislation may be enacted. Clark R. Jackson, superintendent of public utilities, said that recent low fares by taxicab companies have cut the number of street car passengers 2,400 a day. Councilman Campbell declared that if competition between taxicab companies continues, they will be operating at rates as low as the old jitneys.

### New Tariff in Chicago Suspended

A suspension until July 13 of the new passenger tariff of the Chicago Rapid Transit Company, Chicago, Ill., was ordered on Feb. 21 by the Illinois Commerce Commission. At that time attorneys for the elevated lines may appear before the commission to argue for the elimination of the three tickets for a quarter rate, the \$1.25 weekly pass and the establishment of a straight 10-cent fare.

### Ambitious Transit Plan for San Fernando Valley

Plans are now being worked out by a committee called together by the combined chambers of commerce of the San Fernando Valley immediately north of Los Angeles, for the construction of a rapid transit railway line between that valley and Los Angeles. According to D. W. Pontius, vice-president of the Pacific Electric System, who spoke to a group of the leading citizens of San Fernando Valley recently, one million are headed toward California, and it is up to the leaders of the San Fernando Valley just how many will settle there. He added that only by building a railway system that would carry people to the heart of the city in fifteen or twenty minutes could a portion of that host be attracted to San Fernando Valley.

At the present time, the San Fernando Valley is served by an interurban line of the Pacific Electric Railway. It is the expectation of this group of the Chamber of Commerce that the service of the valley can be much improved by the construction of a direct line with a more frequent schedule.

G. A. Damon, prominent engineer, once affiliated with Bion J. Arnold, Chicago, said in commenting on the suggestion that the cost of the improvement be levied against property owners who would benefit most by the road:

As a matter of fact, rapid transit from outlying districts is not popular with many of the suburban communities. Hollywood has no desire for rapid transit and Pasadena is opposed to it. The doubling of land values would work a hardship on many small home owners. Car service to and from Pasadena is improving, the patronage of the Pacific Electric is increasing and I am sure that Pasadena would be unwilling to bond itself for extra service.

Among the advocates of the plan is Charles H. Kline, chairman of the rapid transit committee of the Burbank Chamber of Commerce.

### Harbor Belt Line in Los Angeles Planned

A contract for the unification of about \$59,000,000 of railway facilities in Los Angeles Harbor has been completed by the Los Angeles officials, representatives of the Harbor Commission of Los Angeles and the Southern Pacific, the Union Pacific, the Atchison and the Pacific Electric Railway Companies. All these properties will participate in the development under which an independent operating unit, to be called the Harbor Belt Line, will be organized. Formal action by the city officials and railways is now awaited. The several railroads concerned in the agreement own tracks running into the harbor and the contract provides for the unification of their operation. It is expected that the Harbor belt line will facilitate the arrival and the passing of shipments to and from shipboard in the harbor.

## Dinner to Brady Prize Winners

Louisville Railway entertains its employees at safety gathering. W. T. Kays gets Connelly Award

**M**ORE than 1,000 employees and their wives attended the first all-carhouse safety dinner at noon on Feb. 20 as guests of the Louisville Railway, Louisville, Ky., in the paint shop at 29th Street and Broadway. The dinner was held to commemorate the outstanding safety record on the company's lines in 1926, which won national recognition by carrying off first honors in the Brady Safety Award Contest.

Employees of the company have a record to be proud of, many speakers declared, as they exhibited the Anthony N. Brady Medal Award from the American Museum of Safety to the Louisville Railway for the greatest achievement in safety and sanitation of any electric railway in the United States in 1926. They pointed to the average of 37,490 miles per accident during the month of January on the company's lines. They warned, however, that an even greater effort on the part of every employee is necessary to maintain the high standard that has been established.

Outstanding public service on the part of an individual employee was rewarded by the company at the dinner, when the Anthony F. Connelly Award was presented to William T. Kays, 38 years old, 2426 West Broadway, a motorman on the Oak Street car line, operating out of the 29th Street and Broadway carhouse.

James P. Barnes, president of the company, presented the award in honor of the late Anthony F. Connelly, who died three years ago after being connected with the company for more than 50 years. The award included the Anthony F. Connelly medal and \$75 in gold. Mr. Barnes also announced that Mr. Kays would be a guest of honor of the railway at the American Electric Railway Association convention in Cleveland next September.

Five other employees who received honorable mention in connection with the Connelly Award were Clint Kessler, Fourth and Avery carhouse; Fred Gollar, Shelby Street carhouse; George Bishop, 29th and Broadway carhouse; Charles A. Buren, 25th and Market carhouse, and William Schwindel, 27th and Chestnut carhouse.

Mr. Barnes said it was not believed a few years ago that all of the company's carhouses would ever be represented at the same safety dinner, because it was necessary for each carhouse to have a record of at least 25,000 car-miles per accident in a given month to be eligible for the dinners. Last month was the first month such a record has been attained, he said.

The Chestnut Street carhouse was the only one having a perfect record, as its record of 61,683 miles during January was unmarred by a single accident. The other carhouses' mileage per accident was as follows:

Highland, 67,363; Shelby, 47,523; Market, 41,341; Thirteenth and Main, 37,258; Fourth Avenue, 33,582; Seventh, 33,326; Portland, 31,228, and Broadway, 30,668.

Chartered cars brought motormen, conductors and other employees and their wives to the improvised banquet hall from all sections of the city. Music was furnished by the Louisville male high school band and numerous entertainment features were provided.

A similar meeting on the night of Feb. 20 was attended by more than 1,400 employees and their wives, who were on duty at noon and unable to attend the earlier dinner.

In commenting on the matter editorially the Louisville Times of Feb. 21 said under the caption "High Honor":

Employees of the Louisville Railway are recipients of high honor. Nothing less than good team work, every day, could get for the employees of a city railway the Anthony N. Brady Award from the American Museum of Safety.

The dinner last night commemorating

## Children Ride St. Louis Cars to See Colonel Lindbergh

Approximately 60,000 school children were carried by the St. Louis Public Service Company from various points in St. Louis to the river front to see Col. Lindbergh and the Spirit of St. Louis perform on Feb. 15. Through arrangements with the St. Louis Board of Education the company provided 350 chartered cars and seven special buses to transport the children. Six buses also were put into service between Fourth Street and the levee to provide accommodations for the little ones. The children came from 99 grade and fifteen high and junior high schools scattered throughout the city.

The schedules provided for the children to reach the river front about 1:30 p.m. while 3:20 p.m. was the time set for their departure. It was necessary to reroute every line touching Broadway or Fourth Street and the



A representative group of those who serve humanity

receipt of the award, and calling attention to the January record of more than 30,000 miles per accident directs attention to the spirit and the achievement of the car men. That spirit, and that achievement, should be valued.

By the way, the record pretty flatly contradicts carpers who, here and there, complain that car operators are discourteous and disregardful of patrons. A car operator who disciplines himself in caution is not often one who is without consideration for car patrons.

## Paving Plan in Toledo Awaits Franchise Passage

The Community Traction Company has written the administration at Toledo, Ohio, that it cannot go along with the big paving program unless the plan for the new franchise offered last summer is adopted. This plan would make available more than \$1,000,000 in new money and contemplates several new bus routes.

arrangement called for the turning back of certain other lines. One hundred supervisors were placed at advantageous points to direct traffic while special emergency trouble crews were placed at convenient spots in case of need. But so efficiently did the traffic department of the company operate that none of the 60,000 children was injured or lost while the chartered cars were taken out of the congested zones in time to avoid the afternoon rush.

The Board of Education paid the customary charge of \$14 per street car and \$6 an hour for the buses used. Children and their teachers and principals were provided with identification slips in the form of pasteboard street car tags.

All those wearing such tags were permitted to use the cars to return to their schools. Cars also bore signs showing the name of the school served and carried two small American flags as identifying marks.

### Offices in Ohio to Move

General offices of the Suburban Light & Power Company, the Suburban Power Company and the General Light & Power Company will be moved from Cleveland to Alliance, Ohio, some time during February, according to E. W. Sweezy, president and general manager of the companies. The Suburban Light & Power Company is the holding company for the other two corporations. The companies were recently purchased by New York capitalists who own the Stark Electric Railroad operating between Canton and Alliance. Mr. Sweezy was named head of the concern following the purchase.

### New Safety Contest in Youngstown

Operators of Pennsylvania-Ohio Electric Company are in the midst of a new accident prevention contest with every employee of the three railway divisions outside of Youngstown, Ohio, determined to reduce the accident record to a new low level. The conditions are similar to those imposed before except that the year has been divided into four periods of three months instead of six periods of two months. The division with the highest average mileage per accident at the end of each three-months period will celebrate. The division winning the most victories at the close of the year will get a permanent trophy.

### Interchange Privilege in Olneyville

An interchange of transfers between the Olneyville-Eddy Street buses and trolley cars in Olneyville has been made effective by the United Electric Railways, Providence, R. I., at the request of the Public Utilities Commission. The company had previously issued transfers only on the Eddy Street end of the bus line.

### Strike Continues on Pottsville Lines

The strike on the lines of the East Penn Electric Company, Pottsville, Pa., continues with little prospects of a settlement. Meanwhile buses are being operated in the territory by the individual certificate holders. On Jan. 6 the employees walked out because they were unable to agree with the company on the inclusion of the word "subsidiary" in the new contract. The old contract expired on Dec. 31, 1927. Since the inception of the strike the so-called grievance as regards buses has been abandoned by the men. Now the company insists on certain conditions being eliminated which were in the former contract and is also insisting on the dismissal of a number of men especially objectionable to it. Members of the union appear adamant against receding from their stand that all strikers be returned.

## Recent Bus Developments

### Another Plan to Solve Tangle in Columbia

Another panacea for the transportation ills in Columbia, S. C., was suggested recently when the City Council adopted a resolution to the effect that bus equipment to the amount of \$25,000 or \$30,000 be purchased and leased to some responsible concern for an annual sum sufficient to repay the city in approximately three years. This company would be granted exclusive right during this period to operate bus service in Columbia and to control all forms of motor vehicle transportation charging not more than a 10-cent fare. This resolution sets forth that the city intends to hold the Broad River Power Company for whatever loss, if any, may fall upon the city from the putting into effect of such a plan.

Meanwhile, action is pending in the Supreme Court to compel the Broad River Power Company to resume railway operation. Several bus operating concerns have made definite offers to operate systems in Columbia under certain conditions, but so far none of these offers has been accepted.

The General Assembly, now in session, has under consideration a bill introduced by the Richland delegation (Columbia is in Richland County) which authorizes the City Council to control traffic on the city streets. The purpose of this bill apparently is to put the jitney out of business, as the measure provides that the Council may designate on what streets jitneys may run.

Citizens generally are becoming more and more aroused over the transportation situation and it promises to be a main issue in the election for the members of the City Council to be held in April.

Several of the suburbs of Columbia are being served by privately owned buses which make three or four trips each day. Parents of school children are demanding that something be done to enable them to get their children to school without being forced to depend entirely on uncertain jitneys. Since March, 1927, no street cars have been running in Columbia.

### Muncie Case to Go Back to District Judge

The United States Circuit Court of Appeals at Chicago has reversed a recent ruling of Judge Robert C. Baltzell of the district court in Indianapolis in the suit of the Equitable Trust Company, New York, trustee, against Sumner W. Denny and other operators of independent bus lines in Muncie, Ind. Attorneys have been advised that the district judge erred in his ruling that he was without jurisdiction to try the suit in which the trust company, as trustee of a mortgage on all the property of the

Union Traction Company of Indiana, seeks to prevent the defendants from operating buses in Muncie in competition with the railway lines. The action will result in the case being referred back to the district judge for trial.

### Express Bus to Cuyahoga Falls

A new express bus line to Cuyahoga Falls, Ohio, from Akron, was started on Feb. 27 by the Northern Ohio Power & Light Company. The base schedule is half-hour headway from 4:30 a.m. until 8 a.m., then one hour headway until 3 p.m., when the headway again changes to half-hour until 7 p.m., and after 7 p.m. until midnight one-hour service will be maintained. As the riding develops extra tripper service will be fit in during the rush hours when and as required. The purpose of the new operation is to serve a wider territory in Cuyahoga Falls and to relieve the heavy load situation which has developed on the present express bus line.

### Houston's Suburb Enjoy Bus Service

Fifteen new Twin Coach buses were put into service on Feb. 1 by the Houston Electric Company, Houston, Tex. These buses serve Harrisburg, one of Houston's suburbs, an industrial center and residential section located on the water front. Prior to this installation of bus service one portion of this section was served by twenty jitneys while the other section was served by a car line. Operation of both the jitneys and car line was stopped with the inception of the bus service. Round-trip mileage on the line is 14.5 miles, minimum headway three minutes and the maximum headway nine minutes.

### Regulatory Conference on Buses in Georgia

As soon as it can digest the information secured as to schedules, locations, rates and other features the Public Service Commission of Georgia will call the bus men together for a conference to work out details of supervision, uniform rates and so on. Already the companies must obtain permission from the commission before they can issue bonds or stocks for sale.

Some weeks ago the commission asked all operators of bus lines in Georgia to file reports giving necessary details of their business by Feb. 21. All of the companies complied with the order except the Pierce Bus Lines, Griffin, which questioned the jurisdiction of the commission. However, this company declared that it would comply with the order under protest.

## Detroit Debates Jefferson Avenue Test

Percentage of passengers transferring between bus and car decreases and expenses are much higher

TWO reports on the combined bus and railway service on Jefferson Avenue, Detroit, have been submitted to the Common Council. One was from the Rapid Transit Commission. It is dated Jan. 25. The second is a combined report of the Rapid Transit Commission and the Street Railway Commission. It is dated Feb. 13. The report of the Rapid Transit Commission is accompanied by numerous charts.

### SOME OF THE DETAILS

This latter report points out that the Grand River-Jefferson Avenue lines are the only ones of the system affected by the service. The former is 10.7 miles long, the latter 6.37 miles. Prior to the express experiment they were operated as one line with a combined length of 17.07 miles. A partial combined railway express and bus service was begun on the Jefferson Avenue line for a distance of 4.13 miles on Sept. 18, 1927. There were six express stops ranging from 0.52 to 1.22 miles apart. Free transfers were made to and from a local bus service at these stations for the regular fare of 6 cents. On Oct. 1 the operation of through cars at frequent intervals during the rush hours was resumed. During the last part of December the maximum distance of 1.22 miles between express stops was cut to 0.55 and 0.67 miles by the introduction of a new stop.

There was no change in speed on the Grand River line. On the Jefferson Avenue line the former speed of 13.5 m.p.h. between Woodward Avenue and the terminal at Wayburn rose to 14.8 m.p.h. On the express section alone a speed of 17.96 m.p.h. was attained. For the entire distance the passenger would save 3.24 minutes over his former travel time. At intermediate destinations he would save less, and if his journey required transfer to a local bus, he would lose a little time over the former run.

### COMBINED STREET RAILWAY AND RAPID TRANSIT REPORT

During the first few weeks of the new service about 50 per cent of the bus passengers transferred to the rail, but this dropped rapidly upon the extension of the local bus service to the business district until it reached 12 per cent in December. Of the rail passengers 93.5 per cent remained on the cars. The gross revenue was fairly uniform, being in July \$189,401, November \$182,322, and December \$195,334. The expenses grew rapidly, however, so that while in July the operating ratio on the combined lines was 82.5 per cent, and in August 83.4 per cent, in October, the first full month of operation under the experiment, it was 96.5 per cent, in November 95 per cent, and in December 97.5 per cent.

The combined report to the Common Council, signed by the presidents of the

two commissions, related particularly to a suggested plan to erect a station structure in the center of the street with one or more under-passes to connect the structure with the sidewalk, the whole to be used with a combined electric railway express and local service.

The report points out that such a station would require car loading on the left hand side of the cars, instead of on the right and also a shift of the tracks to curve around the proposed station. Both of these changes would require extensive and costly alterations in existing equipment and track. Referring to the service on Jefferson Avenue the report says, in part:

Jefferson had the highest average speed of any of our street car lines before the present test, and with the express method of operation will permit speed not attainable on any other line. It is the only street that is 120 ft. wide for several miles, and it has the minimum of cross traffic. Its physical characteristics are most favorable. We should learn all we can about the cost, speed, etc., under those particularly favorable conditions before attempting to determine our future policy.

### STATEMENT ABOUT RIDING HABITS

During December, 1927 (after 3½ months of operation), the riding habit on the express street car and local buses was as follows: Using street cars exclusively, 73.3 per cent; transferring from car to bus, 4.3 per cent; using local bus exclusively, 19.4 per cent; transferring from bus to car, 3.0 per cent; total, 100 per cent.

The report declares it is most important to determine whether a bus line can be operated in connection with a railway line upon a 6-cent fare. Further research is thought necessary. The test now being conducted on Jefferson Avenue should be continued for a further period. The proposed transfer station between the tracks is condemned, but a passageway, to be designed and constructed under the direction of the Department of Street Railways, is recommended at Jefferson Avenue at Chene to determine whether pedestrians would use it rather than wait for the green traffic signal and cross on the street surface.

As opposed to these reports the express system of car operation seems to have reduced delays of street traffic. Statements on this point from drivers of automobiles and motor trucks appear on page 358 of this issue.

## Bus Substituted on Chattanooga Line

Discontinuance of passenger service on the Red Bank and White Oak lines of the Chattanooga Traction Company, Chattanooga, Tenn., has been authorized by the Tennessee Railroad & Public Utilities Commission. At the same time the company has been permitted to operate a passenger bus line connecting Chattanooga, White Oak and Red Bank. Transfers on the buses will be accepted on any cars of the railway system. The company must continue railway service between Valley Junction and Woodlawn, a distance of less

than a mile, Woodlawn being off any highway. Valley Junction is the point where the company's Signal Mountain and Red Bank lines divide.

## Would Run Bus Line in Marlboro

The Boston, Worcester & New York Street Railway has made a request of the Marlboro, Mass., City Council for permission to operate a bus line in that city to replace railway service. Action by the City Council was held up until such time as officials explain whether their plan is to discontinue the railway line entirely.

## Bill to Permit Bus Extensions in New York

Under the provision of a bill introduced in the Senate by Walter W. Westall, Republican of Westchester County, section 50-a of the public service commission law is amended by authorizing the commission to permit a street railroad or railroad corporation to operate stages, buses or motor vehicles on streets not included in, but forming route connecting with the route of such railroad, provided local consents are obtained. The matter has been referred to the public service committee.

## Run South of Indianapolis to be Continued

The Indiana Public Service Commission has ordered the Interstate Public Service Company, Indianapolis, Ind., to continue for a trial period of sixty days the operation of a bus route south of Indianapolis. A loss on the route during the first 60 days of operation was reported by the company.

## Replacement on Buffalo Line Under Consideration

Action has been withheld by the Town Board of Cheektowaga on the application of the Buffalo & Williamsville Electric Railway, Buffalo, N. Y., for approval of a franchise to operate bus service through the township as part of the Williamsville-Buffalo inter-urban line to replace the present single track electric railway along Main Street from Williamsville to the Buffalo city line. The Town Board said it desired additional information regarding rates of fare, local stops and maintenance of road repairs.

## Stage Service for California Orange Show

The Pacific Electric Railway, Los Angeles, Cal., has been granted a certificate by the California Railroad Commission to operate an auto passenger stage service between San Bernardino and the Fair Grounds of the National Orange Show during the period each year when that show is open.

# Financial and Corporate

## Financial Structure of Lackawanna Line Simplified

The Lackawanna & Wyoming Valley Railroad, Scranton, Pa., recently arranged with a banking group composed of Taylor, Ewart & Company, Inc., Bioren & Company, and Samuel McCreery & Company, for an issue of \$4,000,000 in bonds, the money to be used to take over from the Scranton & Wilkes-Barre Traction Company, the holding company, the bonds, mortgages, preferred and common stocks of the company and place them in control of the railroad. The Scranton & Wilkes-Barre Traction Company holds \$5,000,000 in bonds of the Lackawanna & Wyoming Valley Railroad. With the elimination of the holding company the Lackawanna & Wyoming Valley will save about \$10,000 a year in interest on bonds held by the holding company.

The \$4,000,000 is to be obtained through the sale of \$2,900,000 first mortgage bonds and of \$1,100,000 gold debentures. Upon completion of this financing, the \$2,900,000 first mortgage bonds and \$1,100,000 debentures will constitute the only funded indebtedness of the company.

The Lackawanna & Wyoming Valley Railroad (Laurel Line), operates by a third-rail double-track railroad of modern construction connecting Scranton, Pittston and Wilkes-Barre. This road, including an extension to Dunmore, is 22 miles in length and has been built entirely on private right-of-way owned by the company with one minor exception. The road is constructed in accordance with standard specifications, permitting an interchange of equipment with the Delaware, Lackawanna & Western Railroad, the Lehigh Valley and the Erie. The company owns the entire capital stock of the Lackawanna & Wyoming Valley Power Company, which generates the power used by the railroad.

Taylor, Ewart & Company, Inc., New York, are offering at 100 and accrued interest to yield 6 per cent \$1,100,000 of the twenty-year 6 per cent gold debentures dated Feb. 1, 1928, and due Feb. 1, 1948.

In addition to this offering Taylor, Ewart & Company, Inc., Bioren & Company and Samuel McCreery & Company are selling at 97 and accrued interest to yield more than 5.20 per cent \$2,900,000 of the company's 5 per cent first mortgage gold bonds. These bonds are dated July 1, 1913, and are due Aug. 1, 1951.

## Stockholders Approve International Railway Changes

At a special meeting of stockholders of the International Railway, Buffalo, N. Y., on Feb. 23 the plan to provide a stronger financial structure for the

company was unanimously approved. Of the outstanding stock 96.18 per cent was represented. The plan provides for substitution of no par value common stock for the present \$100 par, and issuance of \$2,000,000 of 7 per cent cumulative preferred stock. The Public Service Commission has approved the first change, and the company will apply immediately for approval of the proposed issue of preferred stock. Proceeds from the sale of this issue will be used for the substitution of permanent financing for temporary financing, for necessary capital expenditures, and for future similar requirements.

## Chicago Rapid Transit Reports

Company operating elevated lines shows slight decrease in gross and net in 1927. Traffic practically constant

OPERATING revenues of the Chicago Rapid Transit Company, Chicago, Ill., for the year 1927 were \$20,011,911 and non-operating income was \$332,840, making total gross revenues of \$20,344,751, compared with \$20,420,659 in 1926. The fares collected in 1927 averaged 8.30 cents per passenger, a slight increase over the average for the years 1925 and 1926. These facts were contained in the annual report of the company recently submitted to the stockholders.

Operating expenses (including \$323,542 set up for retirement reserve) were \$14,189,150. The taxes were \$1,767,948. Total operating expenses and taxes were \$15,957,099. This compares with \$15,797,655 for the previous year.

### INCOME STATEMENT OF THE CHICAGO RAPID TRANSIT COMPANY For the Year Ended Dec. 31, 1927

Gross operating revenues:	
Passenger revenue.....	\$18,778,321
Other transportation revenues.....	1,233,589
Total.....	\$20,011,911
Operating expenses:	
Maintenance of way and structure.....	\$1,819,075
Maintenance of car equipment.....	1,567,760
Power.....	2,115,545
Conducting transportation.....	7,267,199
General and miscellaneous.....	1,419,570
Total.....	(a) 14,189,150
Net operating revenues.....	\$5,822,760
Taxes and city compensation.....	1,767,948
Operating income.....	\$4,054,812
Non-operating income.....	332,840
Gross income.....	\$4,387,652
Deductions:	
Rentals.....	\$1,074,347
Interest on mortgage debt and equipment obligations.....	2,398,332
Other interest.....	(b) 29,349
Amortization of discount.....	69,526
Total.....	3,571,556
Net income for the year 1927.....	\$816,096

Gross income was \$4,387,652, a decrease of \$235,351 from the previous year.

Interest on funded and other debt, amortization of discount and rentals of leased lines, aggregated \$3,571,556, an increase of \$66,184. The net income for the year, was \$816,096, a decrease of \$301,535.

Dividends of \$464,369 were declared and paid on the company's prior preferred stock, leaving a balance of \$351,726, which was credited to the surplus account.

Corporate surplus as of Dec. 31, 1927, was \$2,917,503, compared with \$2,514,418 at the close of the previous year.

The number of revenue passengers carried during the year 1927 was 226,212,172, compared with 228,812,766 in 1926. This decrease is accounted for in part by general business conditions and considerable unemployment and in part by the fact that a number of conventions and the Eucharistic Congress brought exceptionally large groups of people into the city during the year 1926.

The traffic statistics show a steady increase for the past six years, with the exception of last year, as follows:

Year	Number of Passengers
1922.....	181,280,754
1923.....	203,953,574
1924.....	212,901,024
1925.....	216,045,575
1926.....	228,812,766
1927.....	226,212,172

Since the issuance of the last annual report, \$1,795,000 of first and refunding mortgage 6 per cent gold bonds, due July 1, 1953, were sold to reimburse the treasury for refunding and acquiring underlying lien obligations. Equipment notes and mortgage bonds paid off or acquired during the year aggregated \$1,184,000, which includes \$238,000 first mortgage 5 per cent bonds of the Northwestern Elevated Railroad purchased pursuant to the terms of the sinking fund. The funded debt outstanding in the hands of the public was increased a net amount of \$619,700 during the year. An issue of \$1,500,000, 7.2 per cent prior preferred stock, Series "B," was sold during the year at par and the proceeds were used to reimburse the company's treasury for expenditures for improvements, betterments and additions made to its properties. There were 10,932 stockholders at Dec. 31, 1927, an increase of 1,283 during the year.

Inadequate track facilities in the downtown district have for years been a serious handicap, and the efforts of the company have been steadily exerted toward increasing the efficiency of the available tracks through their more intensive use. This has been accompanied by lengthening station platforms and operating longer trains during the rush hours. The company operated 58,102,242 car-miles in 1927, compared with 57,486,898 in 1926. The company plans during the year 1928 to purchase a substantial number of new modern steel cars.

Various operating changes were made during the year to improve the service

## SURPLUS ACCOUNTS

Balance, surplus Dec. 31, 1926.....	\$2,514,418
Net income for the year ended Dec. 31, 1927 (as above).....	\$816,096
Less dividends paid on prior preferred stock....	464,369
<b>Surplus earnings for the year unappropriated.....</b>	<b>351,726</b>
	<b>\$2,866,145</b>
Miscellaneous debits and credits (Net).....	51,357
<b>Surplus, Dec. 31, 1927.....</b>	<b>\$2,917,503</b>

Note—(a) Total operating expenses include \$323,542.56 credited to Retirement Reserve.  
 Note—(b) Does not include interest accrued during the year, on Adjustment Debenture Bonds.

and new buildings were completed and placed in service. Some important structural changes were made necessary because of street-widening projects which are being carried on by the city. Total expenditures for additions, betterments and improvements were \$1,610,809 and the retirements of property were \$300,593, leaving an net addition of \$1,310,215 to the capital account for the year. During the year \$1,819,075 was expended for maintenance and renewals on the right-of-way and structures and \$1,567,760 for maintenance and renewals of car equipment.

According to the report the rates of fare now in force are insufficient to produce a fair return upon the value of the company's property. The present rate schedules have been in effect a little more than five years and their inadequacy has been thoroughly demonstrated. Although the traffic has steadily increased from 203,953,574 in 1923 to 226,212,172 in 1927, the return in 1927 was only about 3.50 per cent. The highest return for any one of the last five years was about 3.85 per cent in 1926. The board of directors has recently decided that proper steps be taken to secure increased revenues from rates, and, accordingly, the company has caused to be filed at Springfield with the Illinois Commerce Commission new rate schedules. Under these schedules all weekly passes and the three-for-a-quarter tickets will be abolished.

Under the group insurance plan for employees, \$10,399,260 of life and accident and health insurance was in effect at the end of December, 1927. A total of 5,713 men and women in the service are covered by this insurance. The insurance company paid out during the year \$107,320 for sickness and accident claims and \$146,825 for death claims, a total of \$254,145. Accident and health insurance and \$1,000 life insurance were provided at the company's expense as a result of the arbitration of the wage question in 1926.

In furtherance of the company's educational work in accident prevention, 327 demonstrations in first aid were given during the year by trained and uniformed teams of employees, before audiences aggregating 138,300 persons. These demonstrations were given in public schools, at meetings of women's clubs, business men's organizations and fraternal orders. So popular is that feature of the work that there is a

constant demand for demonstrations by the first aid teams.

Continuing the program originated in 1926 of instructing trainmen, ticket agents and platform men in correct methods of serving patrons, a total of 207 conferences of employee groups were held throughout the year. More than 2,600 employees attended those conferences and received direct personal instructions on how to answer questions and give correct information to customers. They also received instructions pertaining to neatness of dress, personal appearance, manner of speech and to showing interest in the passenger's comfort.

At the end of the year, there were 5,885 employees in service, of which number 3,541 have been with the company more than five years and 1,998 for more than ten years. The total pay-roll of the company for the year was \$10,227,783.

### Portland Electric and the Northwestern to Merge

A plan by which the Portland Electric Power Company will acquire by purchase the Northwestern Electric Company, both of Portland, Ore., has been announced by Guy W. Talbot, president of the Northwestern company, and Franklin T. Griffith, president of the Portland Electric, in a statement issued over their joint signatures.

The Portland Electric Power Company owns and operates the entire railway system of Portland as well as some suburban lines.

The Northwestern Electric Company was organized in the days of the former Portland Railway, Light & Power Company, when neither Mr. Talbot nor Mr. Griffith was heading the respective organizations.

### Duplicate Lines in Salt Lake to Be Discontinued

Permission to discontinue railway service and remove its tracks on sections of five lines is sought by the Utah Light & Traction Company, Salt Lake City, in an application filed on Feb. 17 with the Public Utilities Commission.

It is pointed out by the application that the lines are being operated at a loss, the gross revenue received from traffic originating on and destined to points on those lines being insufficient to pay the costs of operation and maintenance, without any allowance for depreciation or return on investment. The application also contends that deferred maintenance on those lines amounts to approximately \$344,315.

The application shows that each of the lines it seeks to remove is paralleled by other lines and proposes to construct one block of track on Third South between Ninth and Tenth East Streets, and the territory now served by the Second South line beyond Third South and Tenth East Streets will be served by cars routed over Third South from State Street to Tenth East.

### Legality of Phoenix Bond Issue Upheld

The State Supreme Court of Arizona decided on Jan. 16 that there is no legal flaw in the \$750,000 issue of bonds authorized by taxpayers of Phoenix to finance a modern, efficient railway to be run under city auspices.

As soon as City Manager Rieger learned definitely the import of the court's decision, he telegraphed its substance to Gray, Emory & Vasconcelles, Denver bond dealers heading a syndicate which includes the Harris Trust Company of Chicago and others. In reply, the Denver firm wired that, on receipt of Mr. Rieger's message it had ordered the bonds printed and that the cash would be available as soon as the bonds could be signed and delivered. Since then the bonds have been publicly offered in a 4½ per cent issue at a price to yield 4.2 per cent.

W. A. Ensign has filed a taxpayers suit in the Superior Court by which it is sought to enjoin the city from paying out any money derived from sale of the street railway bonds to Claude Fisher Company under contract recently entered into to reconstruct the railway system. The ground for action is alleged want of power in the city to own or build a railway outside the city limits.

### Receivership of Ohio Road to Be Lifted

Prospects are good for the reorganization of the Cincinnati, Lawrenceburg & Aurora Electric Street Railroad, which has been in the hands of a receiver since its business was damaged by the 1913 flood of the Ohio Valley. Charles H. Deppe, vice-president of the Fifth-Third Union Trust Company, Cincinnati, the receiver, is slated to become president under the reorganization and Joseph L. Lackner, of the Queen City law firm of Maxwell & Ramsay, to be secretary. Samuel I. Lipp will continue as vice-president and general counsel. As a move toward lifting the receivership articles of incorporation have been filed for a successor company which will issue 7,500 shares of no par common stock, to be distributed among bondholders of the old company. The Fifth-Third Company, as trustee, recently bought the assets of the old company for the bondholders for \$205,000, subject to approval of the Common Pleas Court.

### Scioto Valley Company Seeks Reimbursement

Permission to issue \$500,000 in notes for a three-year period is sought by the Scioto Valley Railway & Power Company, Columbus, Ohio, in an application filed with the Ohio Public Utilities Commission. The proceeds are to be used to reimburse the company for money spent during the past five years from income for extension and improvement of lines.



### Receiver for Western Washington Properties

Upon hearing of the application of the Old Colony Trust Company, Boston, Mass., which has long been acting as trustee under the indenture securing certain bonded indebtedness of the Puget Sound Electric Railway, Tacoma, Wash., Judge Edward E. Cushman of federal court has appointed Scott Z. Henderson, Tacoma attorney, receiver for the company's properties in western Washington. Bond was fixed at \$50,000 with the understanding that if an order is entered directing the property be sold that amount will be raised.

The appointment of a receiver resulted from the filing of a complaint with the court by the Boston company

alleging that there was now due and payable to it as trustee under certain mortgages a total of \$2,552,505 and that a receiver should be appointed for protection of bondholders.

Mr. Henderson was formerly attorney for the Tacoma Railway & Power Company and Pacific Traction Company, the majority of the outstanding stock of which is owned by the Puget Sound Electric Railway, which owns the Tacoma-Seattle interurban line.

Similar action against the Tacoma Railway & Power Company was forecast at a meeting which was held in New York some few weeks ago, but it is denied by Evans & Ellis, Tacoma attorneys for the plaintiff, that the present action has anything to do with the Tacoma Railway & Power Company.

ital stock but they issue bonds instead. Probably the law provides no other way for them to finance the construction or purchase of their public utility properties. It is the intention where such bonds are issued to redeem them at maturity, i.e., to buy them back. Accordingly, a fund is set up called a "sinking fund" to which annual installments are transferred from earnings in an amount sufficient to equal the cost of the property by the end of the period of years that it is estimated the property will last in operating condition. Some cities have not been careful about the length of the term of their bonds, but in all cases the term of the bonds issued should coincide with the life of the property purchased by such bonds, or having a less life, so that the transaction may be conservative. It is apparent therefore that at the time when the property is worn out the bonds will be paid and the city will have neither property nor debt. Should the citizens wish to continue the property in the future, property can be bought with a new issue of bonds to be paid as before.

In conclusion Mr. Hauser says that failure to distinguish between private finance and public finance has led many to make statements that becloud the issue. According to him it is impossible to pay for two plants at the same time and that is, in effect, what is being done when depreciation and sinking funds are both established. He says:

This is practically impossible and would not be right if it were possible. It is impossible first because to pay for one plant and to lay aside funds to purchase another would call for an excessive rate of fare, and for the present generation to provide for future properties to be used by the following generation is wrong in principle because it is making one generation pay for the next generation's needs. Notwithstanding this, however, the Department of Street Railways with its existing rate of fare has been enabled, in addition to paying off \$13,775,656 of debt, to set up accrued depreciation in the amount of \$4,772,153. The amount represented by this accrued depreciation has been earned and has been invested in property, a proper procedure. Not one cent of any of this money has been contributed by the taxpayer. It has all come from the car riders.

In other words, as Mr. Hauser puts it, the Department of Street Railways, during the period from Feb. 1, 1921, to Jan. 31, 1928, the past seven years, has:

1. Paid all operating and maintenance expenses, including paving between tracks.
2. Taxes on the physical property of the entire street car system, the same as if privately owned.
3. All interest charges on the debt outstanding against the property.
4. All sinking fund requirements as required by the City Charter.

## Decrease in Detroit in January

Auditor Hauser says it is believed seven year record of achievement of municipal railway is unequalled. Progress reviewed since city entered on municipal ownership program in 1921

THE balance of net income reported by the Department of Street Railways at Detroit, Mich., for January, 1928, is \$2,977 after the payment of sinking fund charges. The balance of net income for the month of January, 1927, was \$57,999, so that January, 1928, shows a decrease as compared with January, 1927, of \$55,022.

During January, 1928, 38,520,987 passengers were carried by the rail lines and 3,943,503 by the coach lines, a total of 42,464,490 passengers compared with a total of 42,313,631 carried in January, 1927, divided, 38,935,672 rail lines and 3,377,959 coach lines. In other words, the Department of Street Railways carried 150,859 or 0.36 per cent more passengers in January, 1928, than in January, 1927.

On Feb. 1, 1921, the Department of Street Railways began to function as a transportation agency, so that the general balance sheet statement at the close of business Jan. 31, 1928, may be taken as reflecting the results obtained in seven years of municipal ownership and operation. On this account W. M. Hauser, auditor, took occasion to review the seven years operation. During this time the citizens of Detroit have provided by ballot \$41,080,000 for the purchase, construction and improvement of the property. This debt has been reduced until now as of Jan. 31, 1928, it amounts to \$27,304,343. The difference between this amount and the amount provided by the people is \$13,775,656, which represents the city's equity in the property, paid entirely from revenues. Of this thirteen odd million dollars \$6,535,000 has actually been paid off and there is on hand in sinking funds \$7,240,656 to meet the requirements of the debt obligations as they fall due.

On Jan. 31, 1928, other long term debt existed to the amount of \$3,318,296, the action creating this debt having been approved by the Board of

Street Railway Commissioners and the Common Council. The debt incurred remaining unpaid at Jan. 31, 1928, was for purposes as shown below:

New Rail line extensions.....	\$882,648
125 new street cars.....	2,034,000
41 coaches.....	136,647
Property for carhouses, etc.....	265,000
Together.....	\$3,318,296

In order to provide service for the fast growing city it was necessary to finance these extensions in the manner adopted, as no bonds were available for the use of the department.

The accrued depreciation (road and equipment) at Jan. 31, 1928, as shown by the balance sheet, amounts to \$4,772,153 equal to 9.4 per cent of the \$50,549,472 of the cost of road and equipment. Mr. Hauser says that "this, it is believed, compares favorably with any city transportation system in the country."

Since the Department of Street Railways has been criticised with respect to the subject of depreciation, Mr. Hauser made the following statement to help clarify the situation:

Private corporations as a rule issue capital stock and bonds to secure money with which to acquire their property. It is not their intention to purchase back this capital stock or retire the bonds out of earnings of the property, but only to pay dividends on the capital stock and interest on the bonds, i.e., pay interest on the money received—provided such dividends and interest are earned, but that is another story. As such capital stock and bonds are never to be retired out of earnings, some way must be devised to replace the property when it is worn out. Accordingly, an account is opened up called "accrued depreciation" to which annual installments are transferred from earnings in an amount sufficient to equal the cost of the property by the end of the period of years that it is estimated it will last in operating condition. For purposes of discussion, it is immaterial whether such an ideal condition is exactly realized or not.

Municipal corporations do not issue cap-

### Nebraska Company Retired from Railway Field

The Nebraska Railway Commission has authorized the Bethany Traction Company, a subsidiary of the Lincoln Traction Company, to remove all of its trackage from 49th and Holdrege Streets to a point on Hiram Street, Bethany. This will end the corporate life of the company, as it is without ownership of any property now. The suburb of Bethany is served by buses operated by the Lincoln company elsewhere in the city.

### Changes in Capital Structure of Nova Scotia Company

The Nova Scotia Tramways & Power Company, Halifax, N. S., is to change its name to the Nova Scotia Light & Power Company and to effect a capital reconstruction which will affect all the present outstanding security issues and place the company in a financial position with capitalization more in line with earning power.

A total of \$3,682,500 in first mortgage and in general mortgage bonds is now outstanding. Both these issues will be called and will be replaced by a new 5 per cent first mortgage issue. The redemption of the present issues will involve an annual saving in fixed charges, for the general mortgage bonds now bear interest at 7 per cent. Ranking junior to the bonds, the new company will create an issue of 25,000 new 6 per cent cumulative preference shares of \$100 par value. Doubtless, some of this stock will be sold to keep the company in a sound working capital position. The new company will have 40,000 common shares of no par value, of which 2,510 will be issued to the holders of the present common shares on the basis of one new share for every ten shares of the present stock. In addition to this, 32,013 shares will be issued to the holders of the present preferred shares of the company on the basis of 1.54 new shares for each preference share. In this fashion, the company will liquidate its arrears of preferred dividends.

As soon as the shareholders of the company have authorized the change in the name of the company and the capital reconstruction, a bill to carry out the plan will be introduced at the present session of the Nova Scotia Legislature. The Nova Scotia Tramways bonds will not be redeemed until June 1 at the earliest.

The company has just experienced the best year in its history. For the year just concluded, the company's deficit account was reduced from \$204,023 to \$174,476. The results of operations over the past three years follow:

	1927	1926	1925
Gross.....	\$1,491,608	\$1,438,903	\$1,344,099
Operating expenses	933,902	1,003,765	959,371
Net.....	\$557,706	\$435,138	\$384,728
Interest.....	214,976	216,214	216,926
Taxes.....	120,355	16,520	16,526
For reserves, etc....	\$222,375	\$202,404	\$151,276

### Milford-Uxbridge Property Sold

The Supreme Court has authorized Walter Adams, receiver of the Milford-Uxbridge Street Railway, Milford, Mass., to sell the property to the Citron-Beyer Company, Trenton, N. J., for \$86,200.

Bids for the property, which was ordered sold at public auction on Feb. 24, were opened by Judge Wait. The only other bid was made by a New York company. It was for \$83,625. After the bids had been opened and read the New York people raised their bid to

\$86,500. This figure was not considered.

Judge Wait said that the sale had been ordered for the best interests of the people of Milford and Uxbridge, and for the railway itself. It was stated after the sale that the new owners would replace the railway with buses.

The railway was organized 32 years ago as the Milford, Holliston & Framingham Street Railway. Since 1902 the name Milford & Uxbridge Street Railway has been used. The Milford & Uxbridge Company has operated cars from Milford to Framingham through Holliston; from Milford to Uxbridge, through Mendon and Hopedale; from Milford to Medway and from Milford to North Grafton by way of Hopedale, Upton, West Upton and Grafton.

The company operates its cars over the latter line over the rails of the Grafton & Upton Railroad, electrified between Hopedale and North Grafton, the railroad company owning the poles, roadbed and other equipment. Until a year ago the Milford & Uxbridge Company also operated between Milford and Hopkinton. This service was discontinued owing to lack of patronage.

### Hartford-Springfield Route Sold

The New England Transportation Company has purchased the Hartford-Springfield Coach Company for a price reported to be \$250,000 with the purchaser to assume all the outstanding obligations of the Hartford-Springfield line. The line was purchased to perfect the interstate operation of the New England system. The coach company operates between Hartford, Conn., and Springfield, Mass., over the route of the old Hartford & Springfield Street Railway, of which it is the successor.

### Seattle Meets Its Purchase Payment

As a result of financial aid from the light department, city officials of Seattle, Wash., were enabled to telegraph to the city's fiscal agent in New York the annual payment due on March 1 on the Municipal Railway purchase bands. The sum, \$1,252,510, included \$833,000 on the principal and \$250,050 in semi-annual interest. The rest of the amount transmitted will go toward retiring other bonds and meeting interests. This leaves \$6,161,000 yet to be paid on the \$15,000,000 purchase price agreed upon when the city bought the railway system from the Puget Sound Power & Light Company.

The difficulties encountered in meeting this year's payment were sidestepped, temporarily, at least, when the City Council negotiated a loan of \$550,000 from the light department to the railway department to enable the railway to meet its payroll and other operation costs while all the revenues were put aside to make up the March 1 installment. The railway is paying 4 per cent interest on the loan. Of a similar loan made last year, \$100,000 remains to be repaid.

### Dividend on Denver Preferred Cut

The Denver Tramway, Denver, Col., has declared a dividend of 75 cents a share on the preferred stock, payable on April 1 to stockholders of record March 15. This stock is cumulative at the rate of \$1.25 a share quarterly. Since the company paid only 75 cents for the two last quarters it is now \$1 in arrears on the issue.

### Testimony Concluded in St. Louis

Taking of testimony on the valuation of the St. Louis Public Service Company, St. Louis, Mo., was concluded by the Missouri Public Service Commission on Feb. 18. The final witness was M. H. Doyle, chief engineer of C. E. Smith Engineering Company, consulting engineers for the city of St. Louis. His set-up of the investment cost of the railway as of Jan. 1, 1927, used in operation was \$47,375,948, to which he added \$2,091,833 of non-operating property, giving a total investment of \$49,467,781.

The company at former hearings on its application produced evidence to show a reproduction valuation of \$100,000,000 and contended for a rate-base valuation of \$75,000,000. The temporary value fixed by the commission was \$52,000,000.

### Net Earnings of Stark Electric Doubled

By manufacturing power part of the year, and cutting costs by the more extensive and intensive use of one-man cars, the Stark Electric Railroad, Alliance, Ohio, shows a net income for 1927 of \$113,402 compared with \$53,309 for 1926. This is in face of a \$1,600 reduction in gross income.

Where in the past the power bill was approximately \$180,000, the Stark Electric estimates the 1927 cost at \$100,000. The company's plant was operated during most of the year.

Statistics covering the railroad, with the Alliance Power Company, a subsidiary, follow:

	1927	1926
Gross earnings.....	\$459,238	\$460,865
Operating expenses and taxes...	345,836	407,826
Net income.....	\$113,402	\$53,039

### Interborough Balance \$1,401,578

For the seven-month period ended Jan. 31, 1928, the gross revenue from all sources of the Interborough Rapid Transit Company, New York, N. Y., was \$38,656,001 representing an increase of \$2,845,816 over a similar period of the previous year. Total operating and maintaining expenditures were \$22,592,337 an increase of \$1,108,236. The balance after interest and rentals and which is subject to Transit Commission readjustment was \$1,401,578 or an increase of \$1,656,493 for the seven months' period ended Jan. 31, 1927.

## Legal Notes

**FLORIDA.**—*A "Jitney Bus" Is a Common Carrier and Therefore Subject to Appropriate Governmental Regulation.*

The ordinary use of the city streets by a citizen in travel and the prosecution of his business is an inherent right which cannot be taken away by the city and may be controlled only by reasonable regulation. But the right to use the streets for conducting thereon a private business is not inherent or vested. It can be acquired only by permission or license from the city. Where a state had delegated to a city power to license and regulate traffic on its streets, a city ordinance prohibiting the grant of permits for operation of motor buses in congested districts is a valid exercise of the city's police power. [State vs. Quigg, 114 So., 859.]

**LOUISIANA** — *Municipality Operating Railroad Does So on the Same Basis as Railway Corporation.*

The municipality of Monroe, La., which operates a street railway, passed an ordinance requiring a steam railroad passing through the city to construct over its track certain overhead crossings to be used by the municipal street railway. It was held that the municipal railway was a private undertaking operated for private gain and the position of the city in this case was like that of a private corporation engaged in the same business, and not of a governmental agency. Hence, its ordinance was invalid and it must pay for the construction of the crossings used at its own expense. [Vicksburg S.&P. Railway vs. City of Monroe, 115 So., 136.]

**MASSACHUSETTS**—*Responsibility of Subway Company for Maintenance of Station Approach.*

A subway passenger fell over a block on the sidewalk surrounding a subway station. The block was 18 in. high and once had been the base of a traffic sign belonging to the city of Boston. It had been in the same location for at least five months. In the lease of the subway from the city to the operating company, the latter agreed to keep in good condition the "entrances, approaches, stations, etc." of the subway and was held responsible for the accident. [Smith vs. Boston E.R. Co., 159 N.E., 501.]

**MINNESOTA.** — *Status of Fireman Riding to Fire on Fire Truck.*

A fireman riding to a fire on a fire truck was injured in a collision with a street car. Negligence was charged against both the motorman and the truck driver. The court held that the fireman injured was not engaged in a "joint enterprise" with the truck driver. To constitute "joint enterprise" two or more

persons must unite in joint prosecution of a common purpose under such circumstances that each has authority, expressed or implied, to act for all in respect to the conduct or the means or agencies employed to execute such common purpose. [Ring vs. Minneapolis S.R. Co., 217 N.W., 130.]

**MISSOURI**—*When Passenger Status Begins at a Stopping Point.*

Where a person, following directly behind others who had boarded a bus with the knowledge and assistance of the conductor, had set his foot upon the rear platform with the intention of securing passage therein, he became a "passenger," irrespective of where the regular or customary stopping place for the bus may have been. [Hayward vs. Peoples Motor Bus Co. of St. Louis, 1 S.W. (2d), 254.]

**NEW HAMPSHIRE**—*Settlement with One of Two Defendants in Claim in Negligence Case.*

A suit for damages was brought against both an automobile driver and street railway alleging negligence, but settlement was made by the automobile driver before the trial. It was held this did not prejudice the claim of the plaintiff against the railway company, though the sum received from the driver should be deducted from the amount of judgment against the railway company. [Masterson vs. Berlin Street Railway, 139 A., 753.]

**NEW JERSEY**—*Requirements for Franchise Grant Must Be Fulfilled.*

The general ordinances of a city provided that before licenses for motor buses should be granted, applicants must give certain information in writing and then that the application should be acted upon within 30 days. As these requirements were not fulfilled, the court declared that a license granted by the city to a motor bus company was invalid. [P.S. Ry., vs. Hackensack I.C., et al., 139 A., 797.]

**NEW JERSEY** — *Bus Operating Without Authority Is Not Released From Franchise Tax.*

A state act provides that motor buses operating in or through municipalities of the state shall pay 5 per cent of their receipts monthly to the various municipalities, in proportion to the length of route in each. A bus company which had been operating for a long time in the town of Guttenberg without a permit declined to pay this tax because the town had not officially granted its consent to operation. But as the town had not objected to the operation of the bus, the court held the tax must be paid. [Guttenberg vs. Benjamin, 139A, 823.]

**OHIO**—*Liability for Baggage of Bus Passenger.*

A bus passenger attempted to take a hand bag into the vehicle, but an official of the bus company insisted upon taking charge of it, stating that it would be returned to the passenger at the end of the trip. It contained among other things a lady's wrist watch and clothing intended for presents to the passenger's family. At the end of the trip the bag could not be found. The court held that the urgency of the agent of the carrier to take the baggage made the circumstances differ from those where baggage is carried on a check system at the request of the passenger, and that he could collect within reasonable limits both for his own clothing and for articles intended for members of his family, like those specified. A judgment for \$116.25 was upheld. [Cleveland-Akron Bus Co. vs. Rogoff, 159 N.E., 374.]

**TENNESSEE**—*Mother Not Entitled to Recover from Fright and Shock when Minor Son Is Injured.*

A mother witnessed an accident in which her minor son was seriously injured by a street car. It was held she could not recover for injuries resulting to herself from fright and shock at such a time. [Nuckles vs. Tennessee Electric Power Co., 209 S.W., 775.]

**TEXAS**—*Seat Fee For Buses Upheld.*

The Court of Civil Appeals of Texas upheld Article 820 of the Penal Code, which provides that owners of passenger motor vehicles operating for hire, in addition to the regular license fee, based on the horsepower and weight of the vehicle, must pay an additional registration fee of \$4 a year for each passenger such a vehicle will seat. [Lowery vs. English et al., 299 S.W., 478.]

**WASHINGTON** — *Special Precautions Should Be Used When Operating Contrary to Direction of Traffic.*

A railway company had tracks on both sides of the street, but used only one for both directions of operation. In a case of this kind, a car motorman should exercise especial precaution when operating contrary to the traffic on his side of the street, as a stranger might assume that cars on tracks on the right-hand side of the road would be proceeding in the same direction as himself. [Kitchen vs. Tacoma R.&P. Co., 262 P., 961.]

**WISCONSIN**—*Precautions Necessary in Inspection of Tires.*

While a bus was traveling at the rate of 4 to 5 m.p.h., a tire blew out with such force that it punctured the housing and caused injury to a passenger sitting above the wheel. Prior to starting a representative of a tire company had inspected the tires in the manner regularly followed, namely, by feeling them from the outside. The bus company was held to have exercised ordinary care, absolving it from negligence in the injury to the passenger. [Ormond vs. Wisconsin P. & L. Co., 216 N.W., 489.]

## Personal Items

### F. A. Healy Honored

F. A. Healy, auditor and treasurer of the Indiana, Columbus & Eastern Traction Company, Springfield, Ohio, was elected president of the Central Electric Railway Accountants Association, at the recent meeting in Cincinnati. Mr. Healy has been in electric railway work since 1906 and was instrumental in developing the Ohio Electric Railway at Springfield into one of the most extensive interurban systems in the Middle West. With the segregation of the Ohio Electric System properties in 1921, Mr. Healy became secretary-treasurer of the Indiana, Columbus & Eastern Traction Company as well as its leased lines, and for a few months following the retirement of J. H. McClure as active receiver, he took over the work of general manager in addition to his other duties.

At the age of nineteen Mr. Healy was working in the office of the Atchison, Topeka & Sante Fé Railroad. From then he served many steam railroad properties including the Southern California Railway, the Sante Fé, Prescott & Phoenix Railway, the South Carolina & Georgia Railroad, the Augusta Southern Railway, the Ohio River & Charleston Railroad and the Lake Champlain & Ogdensburg Railroad, the Atlanta & West Point Railroad and the Western Railway of Alabama. From the steam railroad field Mr. Healy then went into electric railroading. He helped to form the Central Electric Railway Accountants Association in 1907 when systematic electric railway accounting was in its infancy. Mr. Healy was born in 1861 at Moline, Ill.

### W. O. Wood With Cable Company

William O. Wood, well known in the public utility field and particularly for his work with the New York & Queens County Railway, was recently elected vice-president of the Waterbury Cable Service, Inc., of New York and Chicago.

For many years Mr. Wood was identified with railroads and electric railways in New York, the Middle West and the South. Following his service with the Louisville and Nashville and the Illinois Central Railroad he entered the electric railway field as general superintendent of the Rapid Railway System, comprising the interurban lines of the Detroit United Railway, Detroit, Mich. Subsequently he was superintendent of the rapid transit lines in Brooklyn and later assistant general superintendent with charge of transportation in Brooklyn. For one year he was operating statistician of the Interborough-Metropolitan Company, New York.

Mr. Wood's most recent electric railway connection was as president and general manager of the New York &

Queens County Railway and vice-president and general manager of the New York & Long Island Traction Company and Long Island Electric Railway. These activities covered a period of fifteen years. His headquarters will be at 342 Madison Avenue, New York.

### Wadsworth Winslow Advanced with Hemphill & Wells

Although less than three years have passed since Wadsworth Winslow became affiliated with the Interstate Street Railway at Attleboro, Mass., he has ably demonstrated his ability to take over the position of general manager. This appointment became effective on March 1. Mr. Winslow served as as-



Wadsworth Winslow

sistant treasurer and secretary of this Hemphill & Wells property from Oct. 1, 1925, to Nov. 1, 1926, when he became assistant general manager.

His early experiences were varied and valuable. For eighteen years he was employed by Stone & Webster covering the period from 1907 to 1925. With the Blue Hill Street Railway of Canton, Mass., he received his training in practical railway work, including accounting, car shop practice and service as conductor and motorman. He was engaged in these capacities at Canton for about two years. From this work he went to the Chase-Shawmut Company, electrical supplies manufacturers at Newburyport, Mass., as accountant. His next connection, covering three years, was with the Cell Drier Machine Company, Taunton, Mass., as assistant treasurer. Later he became auditor of the Chicago, Wilmington & Franklin Coal Company, Chicago. All these properties were under Stone & Webster management, which he left in 1925 to join Hemphill & Wells in New York.

Mr. Winslow was born in Quincy, Mass., on Sept. 2, 1888. He was educated in the Quincy grammar school and at the Canton high school. His education also included special courses in accounting in the Walton School of Commerce, Chicago.

### J. D. Alexander and Guy McDougal Advanced in Fairmont

John D. Alexander, for the last seven years purchasing agent of the Monongahela West Penn Public Service Company, Fairmont, W. Va., became manager of transportation on March 1, succeeding R. W. Spofford, who resigned on Jan. 1.

Mr. Alexander has had considerable construction and mining engineering experience. He went to West Virginia first in 1916 with the Sanderson & Porter organization in charge of the reflooring and reconstruction of the Marietta-Williamstown bridge. Later he was the engineer in charge of construction of the Monongahela system power house at Parkersburg and engineer on the construction of the Boaz Bridge between Parkersburg and Williamstown. While working as engineer on the construction of the big power plant at Rivesville, he resigned to join the army and spent ten months overseas in a machine gun battalion.

Following the war he returned to the Rivesville plant with Sanderson & Porter until the construction work there was completed and then he spent some time in Oklahoma as superintendent of pipe line construction. Later he was employed by the Monongahela West Penn Public Service Company to supervise the construction of the additional unit to the Rivesville plant and since that time has been head of the purchasing department.

Mr. Alexander is a native of Alabama and a graduate of the Alabama Polytechnic Institute. He is one of five Alexanders in the employ of the local company, who are, so far as known, not related.

Guy McDougal, who for a number of years has been assistant manager of the purchasing department, becomes acting manager.

### H. H. Cloyd and D. B. Eyer Promoted at Kansas City

Hardy H. Cloyd has been appointed analysis engineer reporting to the controller of the Kansas City Public Service Company, Kansas City, Mo. Donald B. Eyer will have charge of the work in vice-president Buffe's office formerly handled by Mr. Cloyd.

Mr. Cloyd entered utility service in Kansas City in March, 1917, as statistical clerk at the Missouri River power station. Later he was transferred as assistant superintendent of power and equipment. In 1924 he moved to the general office as assistant to the general manager, which title was later changed to assistant to vice-president in charge of operations.

Mr. Eyer went to Kansas City from the General Electric Company in 1924 as electrolysis engineer. He was later made electrical engineer in the office of the general superintendent of maintenance. He was graduated from Kansas University.

# Manufactures and the Markets

## \$787,300 for Railway Work in Atlanta

The 1928 budget for the railway department of the Georgia Power Company, Atlanta, Ga., calls for \$787,300. This budget does not contemplate any new cars for this year. Of the total \$360,000 is for miscellaneous track improvements, \$150,000 for new special work and track to enable the company to use the two new viaducts at Central Avenue and Pryor Street now being constructed by the city, \$40,000 for miscellaneous improvements, buildings, grounds, etc.

The mechanical department gets \$237,300 as a total amount. Of this, \$121,000 is for equipment trust payments, \$74,192 for remodeling and miscellaneous improvements to cars, and \$44,110 for miscellaneous tools and improvements to car shops and carhouses.

The mechanical department expects to change over 40 two-man cars for one-man operation during this year. The cost of changing over twenty of the cars is included in the 1928 budget, and the cost of changing the other twenty is a carry over item from the 1927 budget.

## Case Involving Patents Referred Back to Lower Court

A decision by the United States Circuit Court of Appeals has been made in reviewing the findings of the U. S. District Court in the case of Goldschmit Thermit Company vs. Alumino-Thermic Corporation, Hugh G. Spilsbury and Henry J. Barnes. The review of the findings of the lower court was made on appeal by the Alumino-Thermic Corporation.

The Appellate Court modified the decision of the lower court to the extent of finding that Goldschmit patent No. 900366 covering preheating, which expired during the litigation in this case, was invalid. The court found the so-called insert patent of the Goldschmit company valid and infringed. It stated further that the method of undercutting rails for welding is not an infringement of this patent. Goldschmit Patent No. 1075709 covering the manufacture of ferroso-ferric oxide and its use in the manufacture of alumino-thermic mixtures was held valid and infringed.

The case has been referred back to the lower court for modification of its decree.

## Stone & Webster, Inc., Open Office in Paris

Stone & Webster, Inc., Boston, Mass., announces the opening of a Paris office at 2 Rue des Italiens. The firm has reported on many large foreign projects recently financed, including the Adriatic Electric Company, the

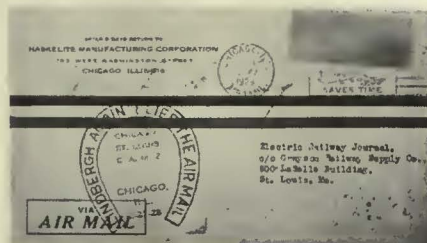
Lombard Electric Company and the Italian Public Utility Credit Institute.

Through the Paris office, investigations, valuations and reports on public utilities, industrial plants and government and municipal loan projects will be handled for bankers and investors.

James F. Case will be in charge of the new office.

## Haskelite Sends Lindbergh Air Mail Letters

An air mail letter carried by Lindbergh was the history-making treat sent by the Haskelite Manufacturing Corporation to all of its customers and prospects in St. Louis, Mo., on Feb. 21 when the colonel operated the Chicago-St. Louis air mail line.



To Electric Railway Journal via Lindbergh air mail

As a letter could not be sent direct to ELECTRIC RAILWAY JOURNAL in New York, the Haskelite Corporation sent a copy to its railway representative in St. Louis, as illustrated, which was forwarded to New York.

The letter carried a special head and was printed on a light grade of paper permitting it to come under the 10-cent half-ounce rate. The contents of the letter boosted the use of air mail and advised that the plywood used in the "Spirit of St. Louis" is Haskelite.

## Some Recent Twin Coach Deliveries

Twin Coach Corporation, Kent, Ohio, reports delivery of twin coaches in January to the following electric railway properties:

Virginia Electric Power Company, Norfolk, Va., ten mechanical drive urban type; Northern Ohio Power & Light Company, Akron, Ohio, one mechanical drive parlor coach; Pacific Electric Railway, Los Angeles, Cal., one urban type; Los Angeles Railway, Los Angeles, Cal., one urban type; Portland Electric Power Company, Portland, Ore., two mechanical drive urban coaches. Eight twin coaches with electrical equipment for operation as trackless trolleys were shipped to the Manila Electric Company, Manila, P. I. One of these coaches was completely assembled while the other seven were shipped "knocked down."

## Expense of New Truck and Taxi Lines Affect Yellow's Earnings

If extraordinary charges of \$561,604 are eliminated, operations of Yellow Truck & Coach Manufacturing Company, Chicago, for 1927 show a slight profit. Militating against the company financially was the expense incidental to bringing out new lines of trucks and taxis. According to the report, the year 1927 was one primarily of readjustment. The company hopes, however, to realize shortly many economies as a result of the concentration of operations in a modern plant and should also benefit by the improvements in and additions to its line of products.

Paul W. Seiler, president of the company, speaking of the 1927 operations, said:

Poor showing in 1927 resulted primarily from losses of an extraordinary character as well as additional expense incidental to bringing out complete new lines of trucks and taxicabs. Eliminating these extraordinary charges, operations for the year would have shown a slight profit. It has become more and more apparent that reconstruction of the manufacturing property was essential. Recently, it has been made manifest that severe writeoffs of asset values were necessary in connection with the obsolescence of products no longer in current production, developing the new line of products and compensating manufacturing operations in a new plant at Pontiac, Mich. Further losses have been suffered in respect to accounts receivable. Writeoffs established in 1927 on account of the above have amounted to \$5,641,605.

Total surplus of the company at the beginning of the year stood at \$8,073,770. As of Dec. 31, 1927, surplus has been reduced to \$165,078. In view of the small available surplus and probable further operating losses during the early months of 1928 there appeared no alternative but to suspend dividend distribution until the operation condition of the company becomes more assured.

The report shows net loss of \$6,858,691 after expenses, depreciation, and special adjustment charges of \$5,641,604. This compares with net income after expenses, depreciation and federal taxes, of \$1,125,922, equal to \$7.50 a share on \$15,000,000 7 per cent preferred stock in 1926. After payment of preferred dividends amounting to \$1,050,000 the total deficit for 1927 was \$7,908,691 compared with a deficit of \$627,578 in 1926 after dividends on the preferred and common B shares.

A statement was issued which in part follows:

The circumstances surrounding the present situation of Yellow Truck & Coach seem to indicate that holders of its preferred stock will be deprived of income thereon for a period of time impossible to predetermine. Feeling that this preferred stock is amply secured as to its ultimate position and recognizing the probability that some of the present holders purchased the preferred stock by reason of General Motors Corporation's investment in the company, General Motors Corporation has authorized for submission to all of the said holders the following offer: For each share of 7 per cent cumulative preferred stock of Yellow Truck General Motors Corporation will pay \$93 in cash. This offer expires at the close of business May 10, 1928.

General Motors Corporation does not recommend either the acceptance or the rejection of the foregoing offer.

General Motors purchased its interest in Yellow Truck as an investment. It in no way guarantees the earnings or securities of Yellow Truck & Coach Manufacturing Company.

At the meeting of directors John D. Hertz resigned as chairman of the board of the Yellow Truck & Coach. John A. Ritchie resigned as vice-chairman and was elected chairman.

### Spring Meeting of the Policies Division N.E.M.A.

Adoption of definite recommendations on problems of business policies and merchandising principles will feature the Spring Meeting of the Policies Division, National Electrical Manufacturers Association, March 14-16, Edgewater Beach Hotel, Chicago, Ill.

Action by the division will be requested on the matter of an All-Electrical Industry Show, on tariff matters, and on adequate statistics. A request for definite support of the program of the Electrical Industry Sales Conference will also be presented.

### More A.C.F. Coaches for Norway

The American Car & Foundry Company, New York, has recently made another shipment of chassis for motor coaches, to the city of Oslo, Norway. Up to date 39 A.C.F. motor coaches have been purchased for this Norwegian service.

These coaches are powered by the 3½ x 5 in., six cylinder Hall-Scott engine, and have a 198 in. wheelbase. The bodies, built and mounted locally, are similar in design to the modern American coach.

### Use of Treadles Grows

An increase of 66 per cent in the use of National Pneumatic Company automatic treadle exit doors in one year is emphasized in a card folder issued by that company. According to the figures given it is stated that 42 cities were operating 1,696 cars and 138 buses equipped with one or more treadle doors a year ago. During 1927 these figures were increased to 64 cities operating 2,829 cars and 216 buses equipped with one or more treadle doors, making a total of over 5,000 doors. A list of the cities in which these cars are operated shows wide geographical distribution of treadle applications.

### Last Knoxville Cars to Be Delivered

The last of twelve new cars ordered in 1927 by the Knoxville Power & Light Company, Knoxville, Tenn., are to be delivered in the next ten days. Specifications of these cars, purchased from the Cincinnati Car Company, Winton Place, Ohio, were published in the issues of Dec. 10 and Feb. 25.

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

Metals—New York		Feb. 28, 1928
Copper, electrolytic, cents per lb.	13.70	
Copper wire, cents per lb.	16.125	
Lead, cents per lb.	6.05	
Zinc, cents per lb.	5.8125	
Tin, Straits, cents per lb.	51.625	
Bituminous Coal, f.o.b. Mines		
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons.	.....	.....
Somerset mine run, Boston, net tons.	.....	.....
Pittsburgh mine run, Pittsburgh, net tons.	.....	.....
Franklin, Ill., screenings, Chicago, net tons	1.825	
Central, Ill., screenings, Chicago, net tons	1.675	
Kansas screenings, Kansas City, net tons.	2.125	
Materials		
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	5.30	
Weatherproof wire base, N.Y., cents per lb.	16.50	
Cement, Chicago net prices, without bags.	2.05	
Linseed oil (5-bbl. lots), N.Y., cents per lb.	10.2	
White lead in oil (100-lb. keg), N.Y., cents per lb.	13.25	
Turpentine (bbl. lots), N.Y., per gal.	\$0.6450	

### ROLLING STOCK

SEATTLE MUNICIPAL STREET RAILWAY, Seattle, Wash., needs additional passenger buses to take care of the increasing population in Seattle's outlying districts, according to a letter recently sent by D. W. Henderson, superintendent of the street railway department, to O. T. Erickson, chairman of the City Council utilities committee. He recommended the immediate purchase of ten new buses for distribution on the nine bus lines operated by the railway department.

DETROIT MUNICIPAL RAILWAY, Detroit, Mich., has not yet made the awards under its recent call for bids for buses. The American Car & Foundry Company is reported as the low bidder on inquiry for 25 to 100 new motor coaches, bidding \$12,962, on gas-electric 40-passenger bus, \$11,265 for gas-electric 30-passenger, \$10,962 for gas-mechanical 40-passenger and \$9,265 for gas-mechanical 30-passenger bus.

### TRACK AND LINE

KULP THEFT PROOF LAMP COMPANY, Chicago, Ill., recently announced that through a contract signed between that company and the General Electric Company, the General Electric Company was to begin immediately to manufacture and bill quantities of Kulp light bulbs.

WASHINGTON RAILWAY & ELECTRIC COMPANY, Washington, D. C., has been ordered by the Public Utilities Commission to remove its center trolley poles in Wisconsin Avenue from River Road to the District line and substitute side-pole span-wire construction. The work will not be started, however, until the projected widening of Wisconsin Avenue takes place this year.

### TRADE NOTES

WAUGH EQUIPMENT COMPANY, manufacturer of Waugh draft gears, has moved its offices formerly located at 1 Pershing Square, New York, to the

new Graybar Building, 420 Lexington Avenue.

BLACK & DECKER MANUFACTURING COMPANY, Towson Heights, Baltimore, Md., has appointed R. C. Bastress, formerly with the Fort Wayne Iron Store Company, to handle Indiana and part of Michigan. L. W. Beuhausen, formerly with Slocum & Kilburn, has been employed to handle Western Massachusetts and G. N. McCarthy will be the representative in Buffalo territory, taking the place of H. B. Austin, who has been transferred to the Chicago district.

MARTINDALE ELECTRIC COMPANY, 1248 W. Fourth Street, Cleveland, Ohio, manufacturer, manufacturers' agent and importer of Martindale motor maintenance equipment products, has recently opened a branch in New York City, at No. 6 East 46th Street in charge of E. H. Mitcham.

OHIO BRASS COMPANY, Mansfield, Ohio, announces the opening of its new offices at 703 Frisco Building, Ninth and Olive Streets, St. Louis, Mo. This office will be the headquarters of H. W. Kilkenny, district sales manager for the company in the St. Louis territory.

LINCOLN ELECTRIC COMPANY, Cleveland, Ohio, announces the retention of A. M. MacFarland as a general sales and development engineer, and states that he will devote his efforts to the development and special application of automatic carbon arc welding, with headquarters at Cleveland.

### ADVERTISING LITERATURE

ROLLWAY BEARING COMPANY, INC., Syracuse, N. Y., has recently issued a new catalog 4-A on their wide series and utility type of bearings and also bulletins: Nos. 53—self-aligning pillow blocks equipped with "Rollway" adapter type bearings to fit standard commercial shafting; 54—Various precision types of "Rollway" radial bearings; 55—Self-aligning pillow blocks equipped with standard "Rollway" bearings and 56—Large "Rollway" bearings in the recently adopted international sizes.

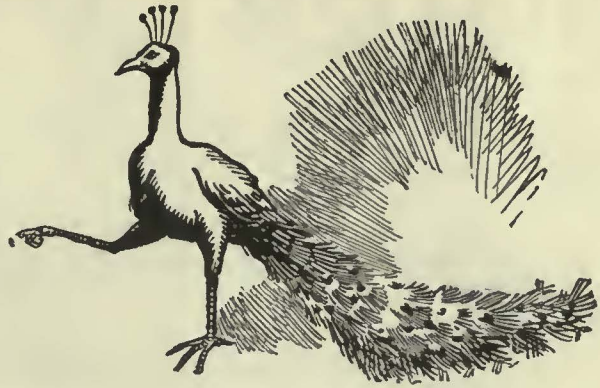
PEREY MANUFACTURING COMPANY, INC., New York, has issued a folder entitled: "The Evening Rush—Gathering in the Shekels by Machinery," emphasizing the advantages of the Perey systems.

INTERNATIONAL NICKEL COMPANY, INC., New York, has issued in booklet form a Monel Metal and Nickel Buyers' Guide.

PYRENE MANUFACTURING COMPANY, Newark, N. J., has issued a folder announcing its "Phomene Accumulator" in which it stresses the advantage of its use as fire protection equipment for liquid hazards.

ARMCO CULVERT & FLUME MANUFACTURING ASSOCIATION is issuing an interesting bulletin, "Basing Confidence in Culvert Strength on Engineering Facts."

**79%** of all  
new passenger cars  
ordered during 1927  
were equipped with  
"Peacock" Brakes,  
and 80% of these had



## "Peacock" Staffless Brakes

Reg. U. S. Pat. Off.

Look at Table IX in the annual Statistical Issue of Electric Railway Journal, January 14, 1928, pages 60, 61 and 62. 79% of the new passenger cars listed had "Peacock" Brakes! and 80% of these were equipped with "Peacock" Staffless Brakes.

Certainly no further proof of the performance and popularity of "Peacock" Brakes is necessary.

Their light weight, small platform space, low installation cost, simple—yet dependable operation; three times the braking capacity of other brakes, chain winding capacity of 144 inches—enabling them to develop maximum braking power under all conditions—and many other advantages make them especially adaptable to modern cars! That's why they are specified on nearly all new cars!

We'll gladly furnish you with detailed information on request.

**National Brake Company, Inc.**  
890 Ellicott Square Buffalo, N. Y.

Canadian Representative:  
Lyman Tube & Supply Co., Ltd., Montreal, Can.



The  
Peacock  
Staffless

# QUICKLY AND EASILY



## with Goodyear Type "K" Rims

CHANGING pneumatic tires on trucks and buses is mighty simple and easy when wheels have been equipped with GOODYEAR TYPE "K" RIMS.

No trouble or straining.

Makes all pneumatic tires quickly detachable as well as *demountable at the rim*.

Goodyear Type "K" Rims, made in two parts—an endless section and a split section—are adaptable to all types of wheels, single or dual. Light and strong, they save tires through the reduction of brake drum heat by ventilation of the wheels. The replacement cost is small. May be had in any size required. Guaranteed

by "The Greatest Name in Rubber." They are widely distributed.

Goodyear engineers will gladly co-operate with truck manufacturers who wish to anticipate the popular demand. Goodyear Type "K" Rims will be standard equipment on pneumatic-tired trucks of the future.

When truck owners and operators change from solid or cushion tires to pneumatics, they will find these rims *efficient, economical and practical*.

Truck and tire dealers should know all about this revolutionary rim equipment designed by Goodyear engineers. Write today to Goodyear at Akron, Ohio, or Los Angeles, California.

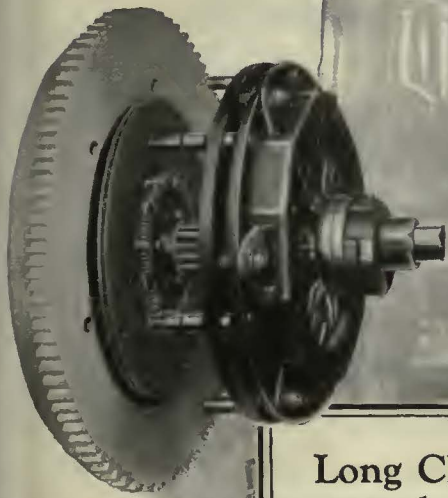
**GOODYEAR**

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Type K Truck & Bus Rim Equipment



# ENDURANCE



Long Clutches and Radiators are built to serve beyond the expected limit of performance. Our engineers are available and are glad to co-operate.

LONG MANUFACTURING COMPANY  
DETROIT MICHIGAN



# LONG

LONG PRODUCTS—AUTOMOTIVE CLUTCHES AND RADIATORS

# Where "low price" and "low cost" join hands

When Reo first announced a 21-passenger bus chassis, fully equipped, many of those who had been paying twice as much for other makes doubted that Reo could combine low price with low maintenance cost.

Here are two out of many instances that prove the amazingly low maintenance cost of Reo busses after hundreds of thousands of miles of steady service:

The Chicago, South Bend & Northern Indiana Railway—operating six Reo Pay-Enter busses purchased simultaneously—found that after 640,622 miles of operation, the total maintenance cost was only *six mills* more per mile than after 354,319 miles.\*

Even more outstanding is the record of the Midwest Motor Coach Company, operating between Northwestern Indiana points and Chicago. After 1,800,414 miles of operation, this company found that the total maintenance cost of its 18 Reo busses was  $2\frac{1}{2}$  *mills less* per bus mile than when the 12 original busses had been driven only 961,110 miles.\*

Convincing evidence that Reo busses—finer today than ever before—are built to run for longer years at a greater profit.

Be sure to try one out—*start it, step on it, stop it.*

REO MOTOR CAR COMPANY, *Lansing, Michigan*

\* Complete analysis of figures—exclusive of confidential operating costs—furnished the skeptical on request.

# REO BUSES

12 AND 21 PASSENGER

102 YEARS OF MANUFACTURING EXPERIENCE



Cane Webbing may be ordered through any H-W sales office.

No. 327 C

## For New Cars or Replacement Use

Here is a good-looking, long-wearing, reversible seat that will help you reduce the equipment cost for new cars or for replacement improvements. The 327 C is fairly inexpensive, yet it embodies all the mechanical betterments of our higher priced seats. This modern style has a soft, comfortable spring back and a deep, single-spring, six-inch cushion. The reversing mechanism, made of malleable iron to withstand hard service, is positive and easy in action.

If you are interested in keeping equipment costs down to a minimum, here is a seat that you will appreciate. A note to the nearest representative, listed below, will bring an experienced man who will be glad to furnish complete details and specifications on the 327 C.

*If you have not received a copy of our new Bus Seat Catalogue, write for it.*



**Heywood-Wakefield**  
REG. U.S. PAT. OFF.

Heywood-Wakefield Company, Wakefield, Mass.; 516 West 34th St., New York, N. Y.;  
439 Railway Exchange Bldg., Chicago, Ill. H. G. Cook, Hobart Bldg., San  
Francisco, Cal. The G. F. Cotter Supply Company, Houston, Texas. John R.  
Hayward, Liberty Trust Building, Roanoke, Va. The Railway &  
Power Engineering Corp., 133 Eastern Ave., Toronto; Montreal;  
Winnipeg, Canada.



# FEWER POLES PER MILE

\* *International Creosoted Pine Poles* are so far superior in strength that a lesser number of poles per mile, or poles of smaller diameter are used in line construction than where poles of other species are used, and still maintain the same factor of safety.

**International Creosoting & Construction Co.**

General Office: Galveston, Texas

*International Poles in signal  
service on the Big Four.*

\* *International Creosoted Poles* give positive assurance of highest quality. Careful and systematic manufacture results in sound poles to start with. Pressure treatment by proven methods using the best creosote oil assures a permanency, without loss of pole strength, and the continued operation of the line without interruption due to pole failure.

Distributed  
by  
**Graybar**  
ELECTRIC COMPANY  
OFFICES IN ALL PRINCIPAL CITIES

# *International* Creosoted Yellow Pine Poles



# Sell Rides!

and let Carnegie Steel Cross Ties help you do it.

A booklet, entitled "Sell Rides," recently issued by the American Electric Railway Association, urges electric railways to promote the use of public, instead of private transportation. "Transportation is a service, the sale of which is subject to the same principles and merchandising practices that apply to the sale of any other commodity to the public."

Of utmost importance is that your service be made as attractive as possible. The ride you sell must be comfortable and uninterrupted.

The basis of a comfortable ride is a smooth, well laid track. A rough track not only offsets the advantages of splendid rolling equipment, but hastens it to a premature discard.

Carnegie Steel Cross Ties, properly laid, insure a comfortable-riding, repair-free track. Interrupted service, due to track repairs, is eliminated. The unit cost (cost per mile of track per year) is lower than that for wood ties.

*Our engineers will gladly cooperate with you.*

**CARNEGIE STEEL COMPANY**  
 General Offices—Carnegie Building  
 PITTSBURGH, PENNA.

**Carnegie Products  
 for  
 Electric Railways**

- Steel Cross Ties
- Standard Rails  
 and Rail Joints
- Wrought Steel Wheels
- Forged Steel Axles
- Steel Shapes, Plates  
 and Bars

1905

# CARNEGIE STEEL CROSS TIES



# *The Element* *behind* Consolidated Sheath Wire Heaters

An exclusive feature of Consolidated Enclosed Element Car Heaters is the G. E. Helicoil Sheath Wire heating unit, specially designed for railway service.

This heating element, originated and perfected by the General Electric Company, consists of a coil of heavy nickel chromium wire surrounded by a dense, highly compacted insulating powder, which insulates the heating wire from sheath or casing. As the heating elements are run at a relatively low temperature, brass sheathing is used, thus providing a non-corrosive and non-magnetic material for the casing.

These elements are particularly adapted to car-heating work, being rust-proof, non-magnetic and withstand distortion and mechanical strain without injury.

Approved by the Underwriters' Laboratories.

### *G. E. Helicoil Sheath Wire Features:*

- Rust-proof and non-magnetic.
- Does not deteriorate under vibration.
- Withstands distortion and mechanical strain without injury.
- Rugged terminals with two binding posts.

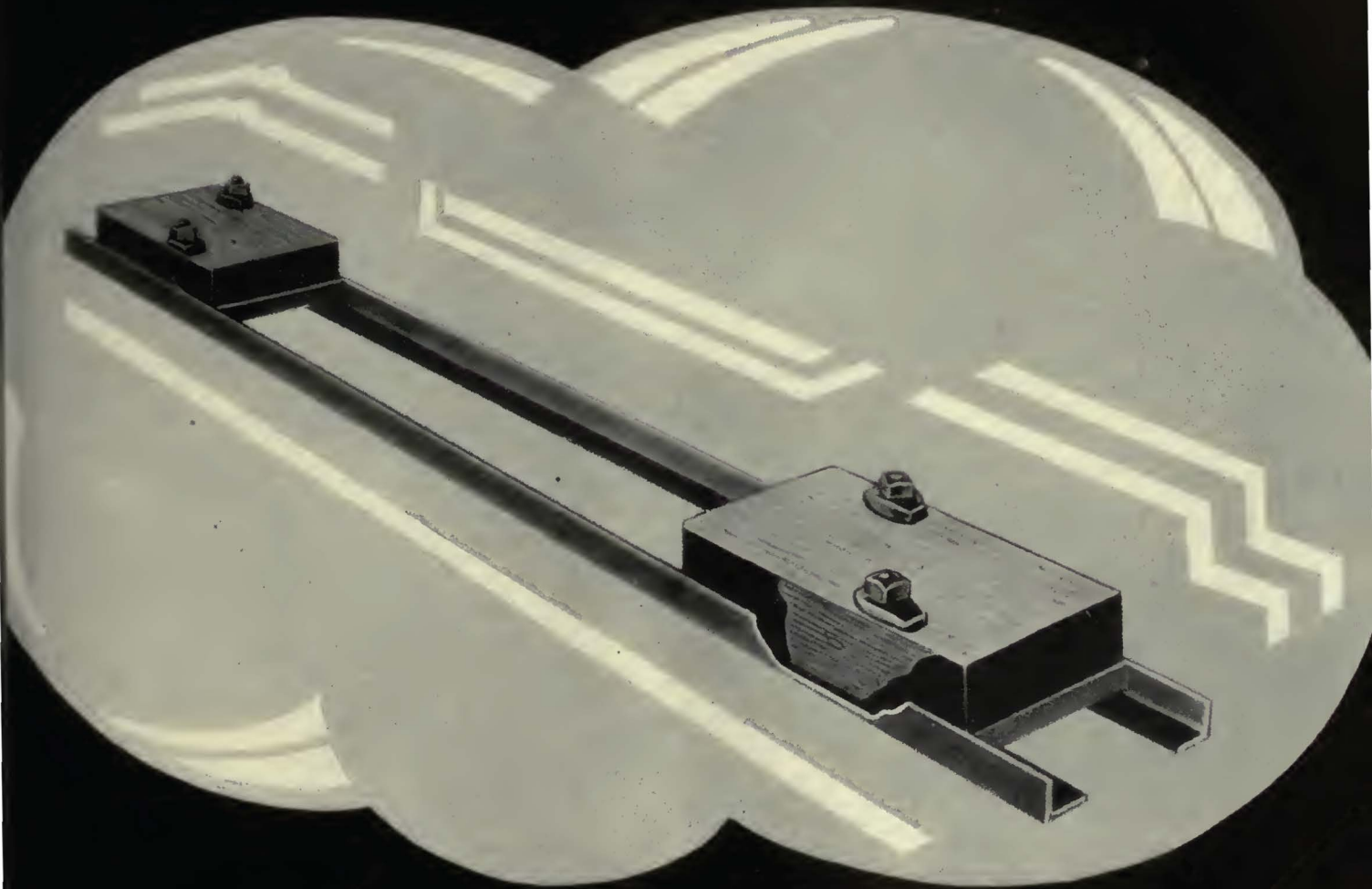
**CONSOLIDATED  
CAR-HEATING CO.**

**ALBANY,  
N. Y.**



# *Track can make or break Profits*

*Dayton Tie Track Makes Them*



# DAYTON TIES

# Track Can Make or Break Profits

## *Dayton Tie Track Makes Them*

The effect of track on revenue and profit goes far deeper than the simple dollar and cents cost. Every part of railway operation is affected by track.

Gross Revenue—People will avoid riding on rough track.

Car Maintenance—Rough track destroys cars.

Rehabilitation—The revenue building effect of new cars may be vitiated by rough track.

Public Relations—Noisy, rough, dilapidated track may destroy public relations you labor to build.

Obviously, anything which has so far reaching effect, should be absolutely right.

Track laid on Dayton is right, as demonstrated by growing use throughout the United States, is absolutely right.

It remains smooth indefinitely, is quiet, exceptionally easy on rolling stock, comfortable to ride over.

Maintenance is low to the vanishing point.

*Dayton Tie Track is always Smooth*

THE DAYTON  
MECHANICAL TIE CO.  
DAYTON, OHIO







**900-D  
Double Rotating Chair**

In combination plush and leather with deep individual seat cushions and divided back. For double-end interurban cars.



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In combination plush and leather with deep individual seat cushions and divided back. For buses and single-end interurban cars.

## Chairs for modern interurban cars

Hale & Kilburn Seats are designed primarily for passenger comfort—the essential characteristic for selling rides in modern interurban service.

Among the many recent H & K 900-D installations on progressive roads are:

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Milwaukee—Texas Electric—Cincinnati, Hamilton, & Dayton—Chicago, South Shore & South Bend—Rochester & Syracuse—Georgia Power Co.—Chicago, Aurora & Elgin—Northern Ohio P. & L. Co.

If you, too, have a new car program or a remodeling program, you will find an H & K Seat to meet your requirements.

*Ask for a consultation with one of our representatives.*

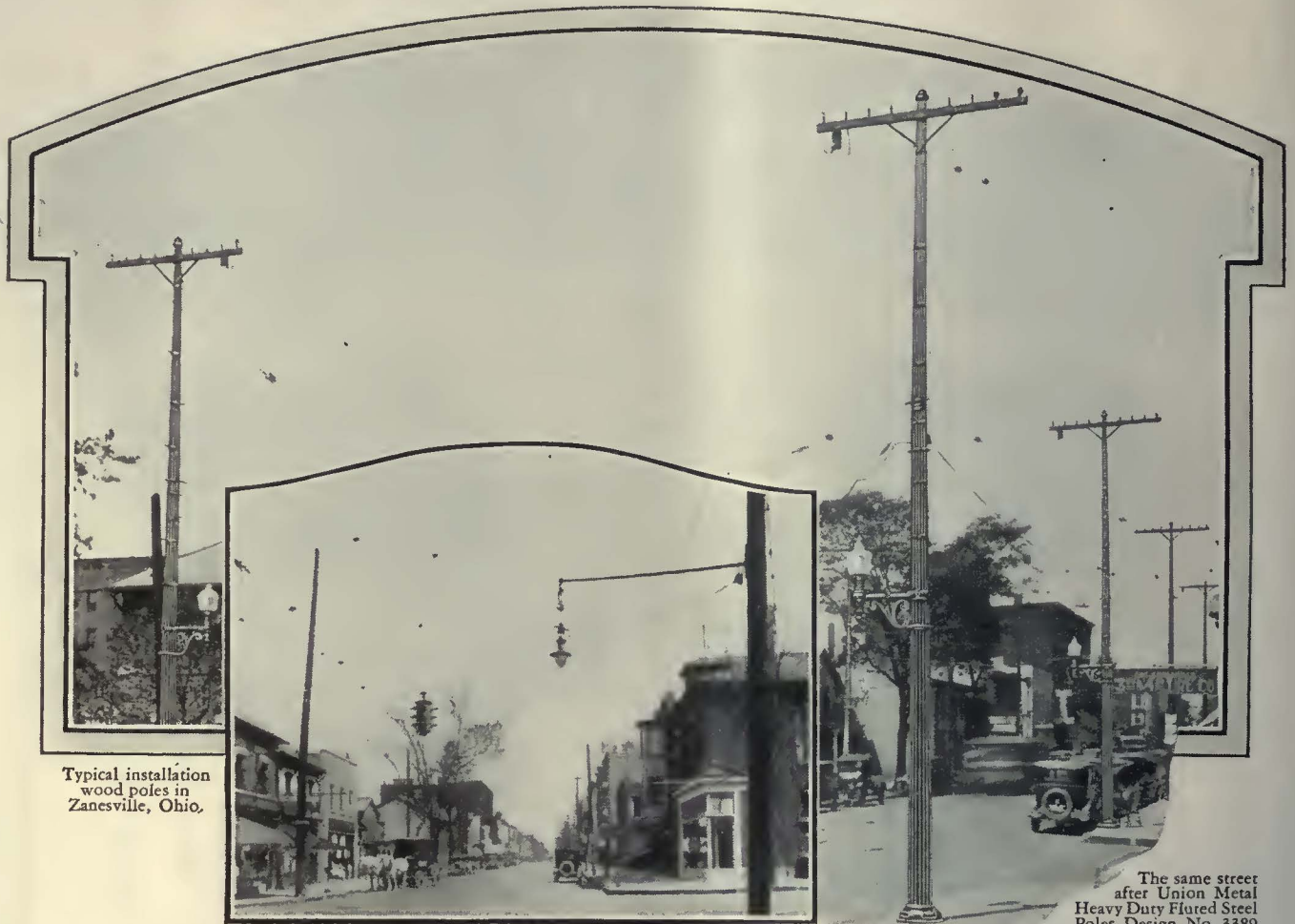
**HALE & KILBURN COMPANY**  
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Typical installation  
wood poles in  
Zanesville, Ohio.

The same street  
after Union Metal  
Heavy Duty Fluted Steel  
Poles Design No. 3389  
had been installed.

## Zanesville Beautifies the Curb Line

CIVILIZATION moves rapidly, eliminating the makeshifts and making obsolete the practices of yesterday. Thus ornamental steel poles for transmission and distribution lines are replacing the old-style, ugly wooden poles just as the electric light displaced the kerosene lamp.

Take Zanesville, Ohio, for instance. There, 525 Union Metal Heavy Duty Fluted Steel Poles will soon replace the cumbersome wooden ones along the curb line. The first section of the new system is now installed and carries both the trolley-span wires and the over-head equipment. Instead of irregular rows of wooden

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Zanesville is reaping the benefits of Union Metal advantages: the low installation and maintenance costs, the ease and speed of replacement, proper ventilation, the anchor rod construction and the unusual strength and durability.

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THE UNION METAL MANUFACTURING CO.

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# UNION METAL

## DISTRIBUTION AND TRANSMISSION POLES

# PIN TERMINAL RAIL BONDS



*View of 20th Century rounding bend at Marblehead. The New York Central is always among the leaders in modern equipment. Insert shows our type CPO1 Bond used on all main line tracks*

**B**ECAUSE of the ease of installation, Pin Terminal Rail Bonds are used on many of the larger railway systems. They are accessible for inspection, show low maintenance cost, insure strong contact and low resistance.

The American Steel and Wire Company has a rail bond for every requirement. Our engineers will be glad to assist you in selecting the best bond for your needs.

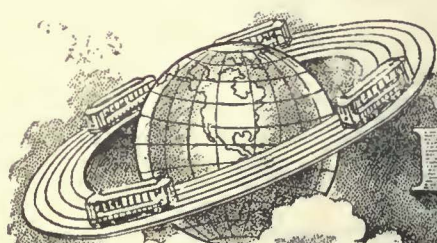
## American Steel & Wire

Sales Offices:

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**Barron G. Collier**

INCORPORATED

CANDLER BLDG. NEW YORK



**AMCRECO  
PRODUCTS**

*do not decay*

**U**NTREATED piles, poles, ties and timber decay—in some cases very rapidly.

But Amcreco products resist this attack of nature. They are preserved by full pressure treatment by the Lowry process using pure creosote oil. Years of experience have demonstrated the preservative and practical value of creosote oil in wood preservation. Similarly, the superiority of the Lowry process has been firmly established.

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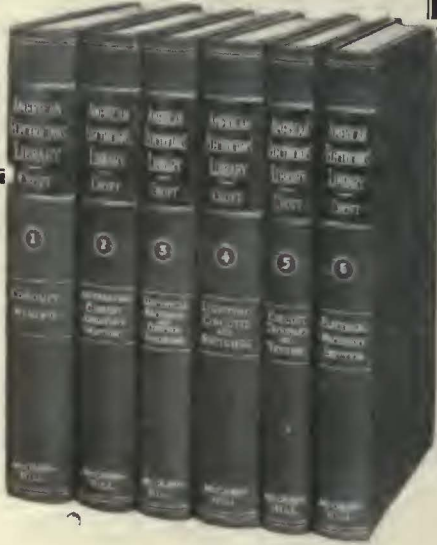
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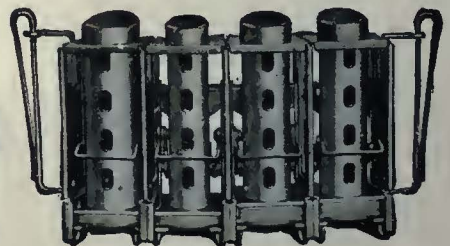
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COLLECTING  
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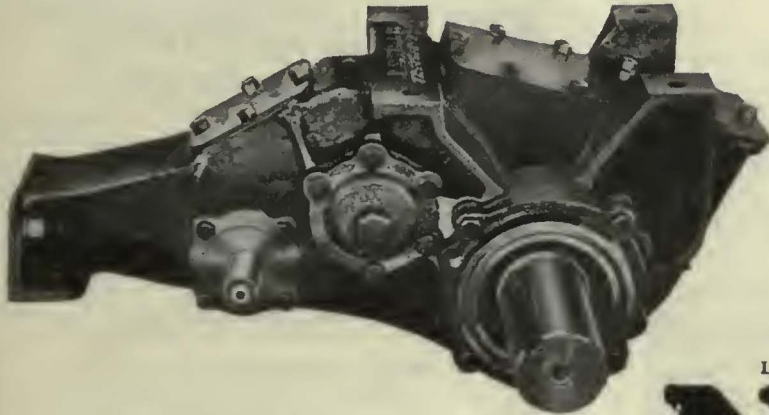
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—are no longer operating problems. We can show you how to take care of both with new equipment. The Peter Smith Forced Ventilation Hot Air Heater will save, in addition, 40% to 60% of the cost of any other car heating and ventilating system. Write for details.

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Use them in your Prepayment Areas and Street Cars

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Electrically Welded Joints

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W-91, Electric Railway Journal  
Tenth Ave. at 36th St., New York City

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**15 BIRNEY SAFETY CARS**

Brill Built  
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Cars Complete—Low Price—Fine Condition  
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Tie Plates  
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\$200,000 worth of Modern Rolling Stock and Equipment offered at **SACRIFICE PRICES!**

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A buying opportunity like this isn't offered you every day! Check your present equipment needs, contemplate your future needs—**AND BUY NOW!** These four complete railways must be dismantled within a limited time, rockbottom prices prevail to effect quick disposal—the equipment must be sold *at any cost!* All of it is modern and in excellent condition ready for service "as is," or we can alter it to suit your requirements. Reasonable terms extended to responsible parties. New circular covering this big sacrifice sale, with complete descriptions of all items offered, is just off the press—**WRITE FOR IT!**

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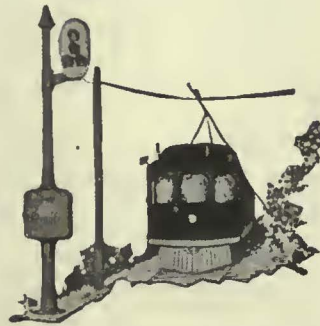
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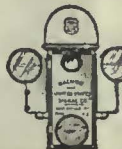
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