

# ELECTRIC RAILWAY JOURNAL



Experience, craftsman-hip, facilities, . . . these are the things which make the difference between a metallurgist's formula and the dependable, uniform, trade-marked product which is Phono-Electric Trolley Wire.

Phono-Electric overhead is a measurable economy. The savings to be effected under any given conditions have long been demonstrated in practice.

BRIDGEPORT BRASS CO., BRIDGEPORT, CONN.



Phono Electric



# Where 17 Railroads Meet the Sea

**H**OUSTON is rich in history, great in commerce, and outstanding in progress.

Houston was the center of the patriotic movement that gave us the state of Texas.

There, 17 railroads meet the sea and form one of the great railroad centers of the world.

Just recently, the 25-story Neils-Esperson Building was completed. It is said to be the finest building, architecturally, in the Lone Star State.

Now the Houston Electric Company has entered an extensive modernization program, presumably to place Houston in the front rank of southern cities in *transportation service*.

In progressive Houston, where 17 railroads meet the sea, Westinghouse modern railway equipment predominates.

Westinghouse Electric & Manufacturing Company  
East Pittsburgh Pennsylvania

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



1927

# Westinghouse

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# ELECTRIC RAILWAY JOURNAL

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## Let the JOURNAL Do It

**T**IMELY facts about the use of loading platforms alongside street railway tracks in many cities are given in a comprehensive survey article appearing in this issue of the JOURNAL. Detailed information has been secured from all the larger cities in this country. At present, engineers of a number of important railway systems are confronted with problems concerning the installation of loading platforms. Letters we have received indicate that the results of this survey are being awaited with lively interest.

Making an investigation of this sort, which would be a large undertaking for any single individual engrossed in his own daily problems, is one way in which ELECTRIC RAILWAY JOURNAL serves the industry.

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SAVING THE RAIL SAVES THE RAILWAY

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*333 amp.  
at 500 v.*

*209 amp.  
at 300 v.*

*150 lbs.*



# “AJAX”

## ELECTRIC ARC WELDER

Do you realize that the Ajax is in a class by itself judged by combination of high capacity and low weight? Judged by any other standards, “Ajax” also maintains its lead. Its simple wiring scheme with all circuits in sight, the accessibility of all parts, the ample ventilation, the trolley pole making contact on the bright underside of the wire—these are some of the other features which make “Ajax” first choice on so many roads. Finally—price—lower than you’d expect if you didn’t know.

*Why not get a quotation?*

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Frazar & Co, Japan.

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SAVING THE RAIL SAVES THE RAILWAY

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# Famous for Service—the Big 4



## Marathon Trolley Ears

**S**HEER MERIT, demonstrated by unrivaled records of service—in some instances 420,000 car passes and over—has made O-B Marathon Trolley Ears the choice of Line Superintendents on every property where used.

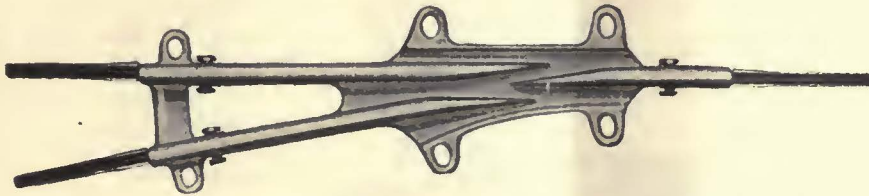
Besides giving from two to three times the service formerly expected of trolley ears, O-B Marshalls eliminate wire wear under the ears and materially reduce the number of line breaks. Every Marathon on the line means money saved.



## Type N Lock Hanger

**T**HOUSANDS of O-B Type "N" Lock Hangers in service on many properties have demonstrated the dollars and cents value of its special steel spring washer construction. A permanently tight joint between hanger and ear is made by sim-

ply screwing the ear onto the hanger stud. No backing off of the ear is necessary to secure alignment with the trolley wire. This eliminates trouble and rapid depreciation—insures greatly increased service.



## BC Frog

**C**LOSE to half a million car passes is the average reported by five properties using O-B Type "BC" Trolley Frogs. Many individual "BC" Frogs gave even longer service: one lasted for 652,500 car passes before it was replaced.

The big reason for long life is the close coupled center construction, which permits the trolley wheel to ride on its groove from end to end. There is no wear on the pan. This frog can be placed farther out of the curve, reducing wire wear.



## C Splicer

**T**HE PREFERENCE shown by scores of Line Superintendents for the Type "C" Splicer has made it the largest seller in the O-B line of Splicers. Repeat orders have come from every property on which it has been used.

Its narrow cross section, low center of gravity, strength and durability of the metal, combine in giving a permanently straight, smooth underrun. All of which means long, trouble-free service. Wire enters in a straight line. Easily installed.

Ohio Brass Company, Mansfield, Ohio  
 Dominion Insulator & Mfg Co., Limited  
 Niagara Falls, Canada  
 2208

Ohio Brass Co.

PORCELAIN  
INSULATORS  
LINE MATERIALS  
RAIL BONDS  
CAR EQUIPMENT  
MINING  
MATERIALS  
VALVES



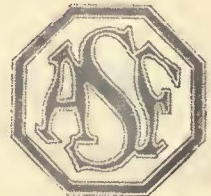
# Would you try to row a boat with one oar?



It can be done, but the inefficiency of steering against the turning effect of the one-sided force is obvious.

Similarly, balanced braking (the double shoe clasp type) is vastly superior to the single brake shoe rigging. The heavy braking load is equally balanced on opposite sides of the wheel. There is no shifting of the journal box bearing; no unbalanced load on truck frames and truck springs; less brake shoe wear; less journal box wear; fewer hot boxes; fewer slid-flat wheels; smoother and shorter stops; less train resistance in starting.

In other words, dozens of advantages—all making for economy and better transportation service.



AMERICAN MULTIPLE-UNIT  
CLASP BRAKES

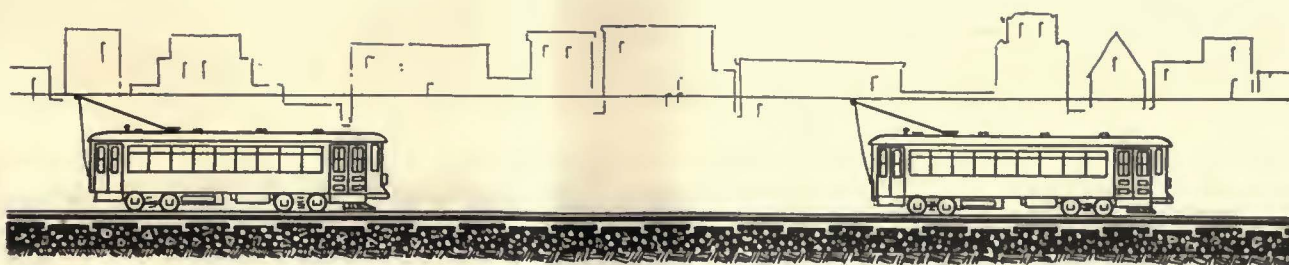


## AMERICAN STEEL FOUNDRIES

NEW YORK

CHICAGO

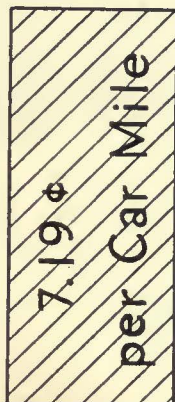
ST. LOUIS



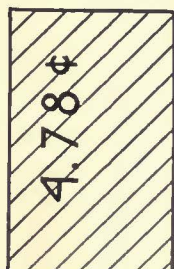
# *New Cars will Coast Farther and Last Longer on Renewable Track*

Power Costs on  
Cars

OLD CARS



NEW CARS



Net savings 2.41c.

A LARGE factor in the power savings possible with new cars is new track. Our users say their new cars coast farther on Twin Tie Renewable Track than on other construction. Leakage and stray currents are minimized, and moreover, your riders and other users of the streets know that this is best in city transportation. With Twin Ties the initial cost of new track is reduced—Ask for delivered prices on Twin Ties and use the man-hour detailed estimate sheet with the quotation to check what 200 electric railways know. Twin Tie Construction will help save power, but best of all, it saves in construction costs.

THE INTERNATIONAL STEEL TIE COMPANY  
Cleveland, Ohio



Renewable Track? Rail Tilting?  
Rigidity? Flexibility? Noise? Old  
Concrete Base? Costs? Bearing?  
Construction Methods?

Look it up in your "Paved Track Note Book"

# Steel Twin Tie Track



## Modern Problems and the Safety Car

**S**AFETY Car Control Devices were designed to eliminate many of the problems confronting modern traction progress.

By ingeniously interlocking the power, brake, and door controls, Safety Car Devices provide for modern safety and efficiency in operation. This centralized control makes for ease of handling and the possibility for one man operation.

The foremost traction companies of the world have recognized the unlimited advantages of Safety Car control, and are specifying it as standard equipment on their modern, new cars—many, too, are by its adoption, rejuvenating old equipment.

*We make the equipment which makes the Safety Car.*

*One of the most recent installations of Safety Car equipment has been in Wheeling, West Virginia, where the Wheeling Public Service Company has placed in operation fifteen cars by Brill, all of which are Safety Cars.*



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

*Postal and Telegraphic Address:*

**WILMERDING, PA.**

CHICAGO SAN FRANCISCO NEW YORK WASHINGTON PITTSBURGH



KEYSTONE TROLLEY CATCHERS

KEYSTONE GEAR CASES

KEYSTONE ROTARY GONGS

LIGHTING FIXTURES

FARADAY CAR SIGNALS

GOLDEN GLOW HEADLIGHTS

HUNTER KEYSTONE SIGNS



## Golden Glow Headlights



To increase patronage, add attractiveness and efficiency to your cars by selecting your equipment from the broad line of Keystone Car Specialties.

### Golden Glow Headlights

Though projecting powerful and well concentrated beams of light, the greenish-yellow glass reflector eliminates a great portion of dazzling effect by absorbing the violet and blue rays. This glass reflector will not scratch, tarnish or corrode. Golden Glow Headlights are made in various styles and sizes to suit every requirement. Provide this safety for your passengers and your equipment.

Get Catalog No. 7 for full particulars of Keystone Equipment.



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## Where Specifications Agree

For three years the Department of Street Railways of the City of Detroit has been making experiments and service tests to determine the proper type of double deck coach equipment for its requirements. Westinghouse Air Brakes were included on all test coaches, and following this actual operating experience, were included in purchase specifications for new equipment.

Fleet Operators everywhere have quickly recognized the value of air brake control and purchase specifications now read—"Air Brakes—by Westinghouse."

Progressive Coach Builders—whose engineers, in addition to forecasting future design trends, must consider the utility of every element in its relation to the reliability and economy of the complete unit, and whose sales executives must provide a vehicle to meet operator demand, with distinctive sales features—have responded by adopting Westinghouse Air Brakes as standard factory equipment.

Builders and Buyers specifications now agree—Air Brakes—by Westinghouse.



WESTINGHOUSE TRACTION BRAKE CO.  
Automotive Division, Wilmerding, Pa.

# WESTINGHOUSE AUTOMOTIVE AIR BRAKES

# Clearvision

To see the maximum  
road bed—to get an  
unobstructed view—

**This is CLEARVISION**

—an exclusive

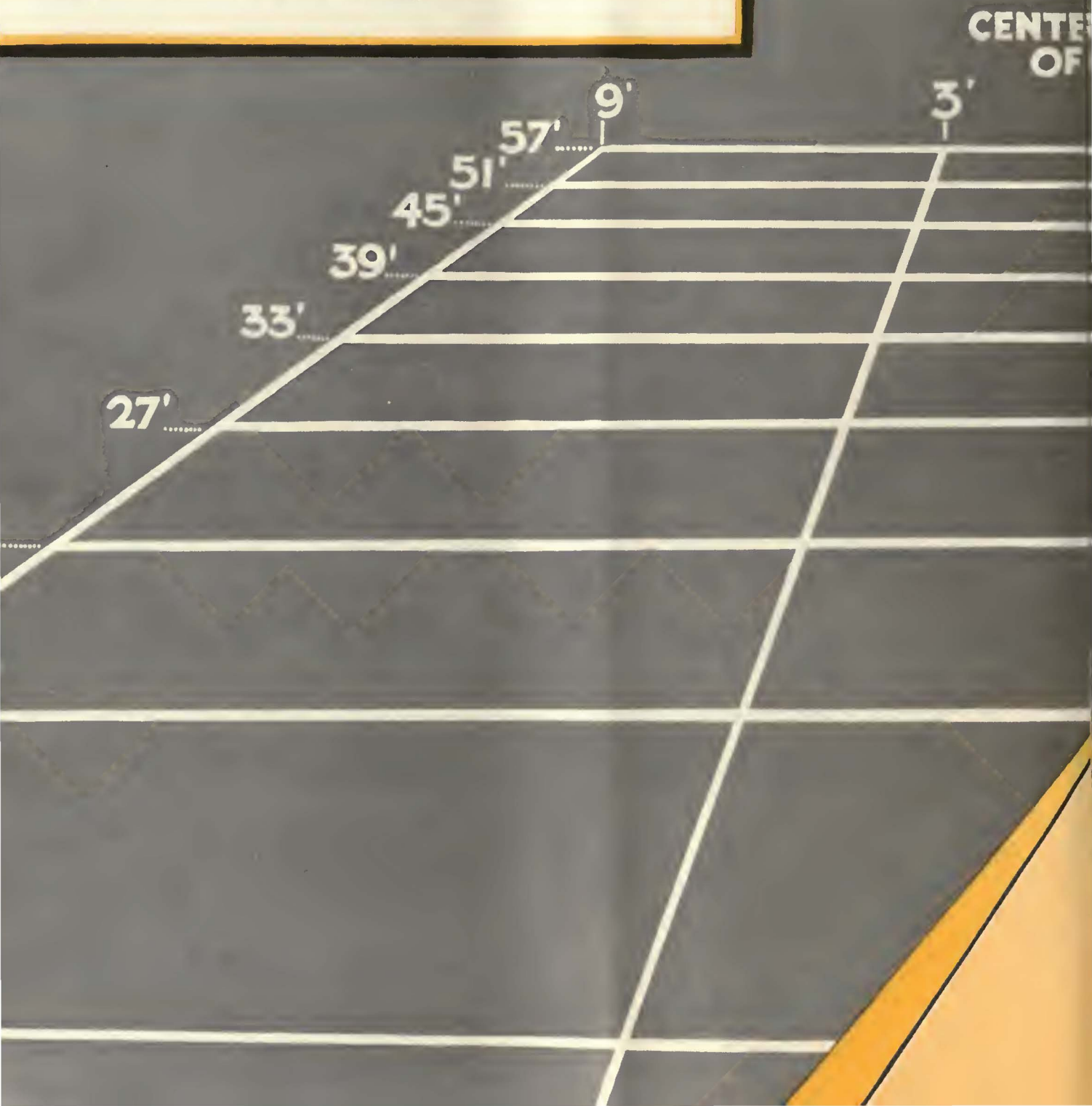
**Mack feature**

which promotes safety,  
reduces accidents, keeps  
down claims—

**The Mack Clearvision Windshield with its total absence of large posts, combined with Mack-designed hood and slanting radiator, gives the maximum of driver vision.**

**From the driver's seat, the road as near as 17 feet in front of the bumper can be seen. In the ordinary bus, from the same position, the road is obstructed as far ahead as 55 feet by the radiator cap, and the radiator itself obstructs vision to 26 feet.**

**Such clear vision as Mack gives promotes safety. It brings more of the road nearer. It keeps accidents and claims further away.**







For Their Latest Route The Portland Electric Company  
Have Chosen Six Cylinder City Types

## **When Reputation Counts**

**Twenty-seven years of manufacturing one product for one purpose—highway transportation.**

**Such a record must have influenced the Portland Electric Company when they considered placing their last order for Macks. They realized that their reputation depends on the kind of service they render and that their service can be no better than their equipment. And they chose Macks.**

**The Clearvision Windshield, the Mack hood and the Mack sloping radiator will give their drivers a decided advantage in handling their bus—maneuvering, pulling up closely to the road, avoiding road depressions.**

**They chose Macks—reputable, reliable, equipment.**

**Mack Trucks, Inc.**  
International Motor Company  
25 Broadway, New York City



*“The FRIENDLY COOPERATION  
OF THE PUBLIC”*



**O**BTAIN the friendly cooperation of the public. . . . Adopt modern methods and equipment,” says the Advisory Council of the A. E. R. A.

By removing the annoyances and dangers of manually operated doors on street cars, by eliminating friction and congestion in the aisles and at the entrances and exits, by reducing standing time and increasing schedule speed, N. P. Door and Step Equipment has done much to win “the friendly cooperation of the public.”

**NATIONAL PNEUMATIC COMPANY**

*Executive Office, 50 Church Street, New York*

*General Works, Rahway, New Jersey*

**CHICAGO**  
518 McCormick Building

**PHILADELPHIA**  
1010 Colonial Trust Building

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

# HEAT!

## Killer of Brakes

**Licked by  
BRAKEBLOKS**



HEAT kills brakes. Heat burns out binders of fabric linings. Heat chars and glazes linings, and makes them slip. Heat passed from oversized drums to nearby tires causes blowouts. Heat is the thing to blame for accidents, for relining expense, for delays, for danger.

You can't dodge heat. When you stop 16,000 pounds going down a hill you generate just so much heat, no matter how you stop the moving mass.

You can't dodge heat—but you can lick it—you can prevent it from making trouble—you can use a braking material that heat doesn't bother, and a material that will get rid of heat fast.

That's the way the American Brake Materials Corporation answered the whole question of automotive braking—by inventing Brakebloks, a new material that has the hardness of 35 carbon steel—that has no metallic content—that won't burn out—that has a life so long that ordinary braking material is outlasted three and four times.

Now—brake linings of the new material are made in separate segments for the quick dissipation of heat. Drums are smaller—tire clearance is greater—blowouts from heat are overcome.

For the savings that result from less relining—fewer blowouts—for the certain stoppage of trucks, busses, taxicabs and pleasure cars, write for booklet "The Last Battle of the Momentum—Brake War", or send us your specifications for recommendations.

Brakebloks are individual brake shoes fastened to the brakeheads or brake bands, allowing room for heat dissipation.

- 1 They mean constant, sure braking control.
- 2 They are not affected by water, oil or grease.
- 3 They do not deteriorate or become less efficient under great heat.
- 4 They do not swell or shrink; they are always the same.
- 5 They do not squeal.
- 6 They do not cut drums.
- 7 They save money in material, in labor, in relining time saved.
- 8 They outwear all other friction materials.
- 9 They are applicable to all automotive vehicles and industrial machinery.
- 10 They are made by the company with the longest braking experience.



AMERICAN BRAKE MATERIALS CORPORATION  
Dept. J-1                      DETROIT

RAILROAD BRAKING PRACTICE      APPLIED TO      MOTOR CARS AND MACHINERY

# AMERICAN BRAKEBLOKS

AMERICAN BRAKE MATERIALS CORPORATION, DETROIT  
Subsidiary of  
THE AMERICAN BRAKE SHOE AND FOUNDRY COMPANY



# Light Weight

or

# Under Weight

Cincinnati, as a pioneer in the movement toward lighter weight in electric railway cars, has worked consistently to establish a *practical* standard of lightweight construction.

The **BALANCED** Lightweight Car as Cincinnati builds it today is the result of this effort. Its lightness is born of modern engineering in every detail of construction,— the use of lightweight steels and aluminum castings; the accurate co-ordination of each unit in its relation to the whole.



You will find no signs of *underweight* here, no suspicion of the "shaving down" process. One well known user of Cincinnati Lightweight **NEW** Cars wrote us recently that "they stand up just as well as the heavier cars." We believe they will stand up very much better, because weight for weight the component parts of Cincinnati **NEW** Cars are very much stronger.

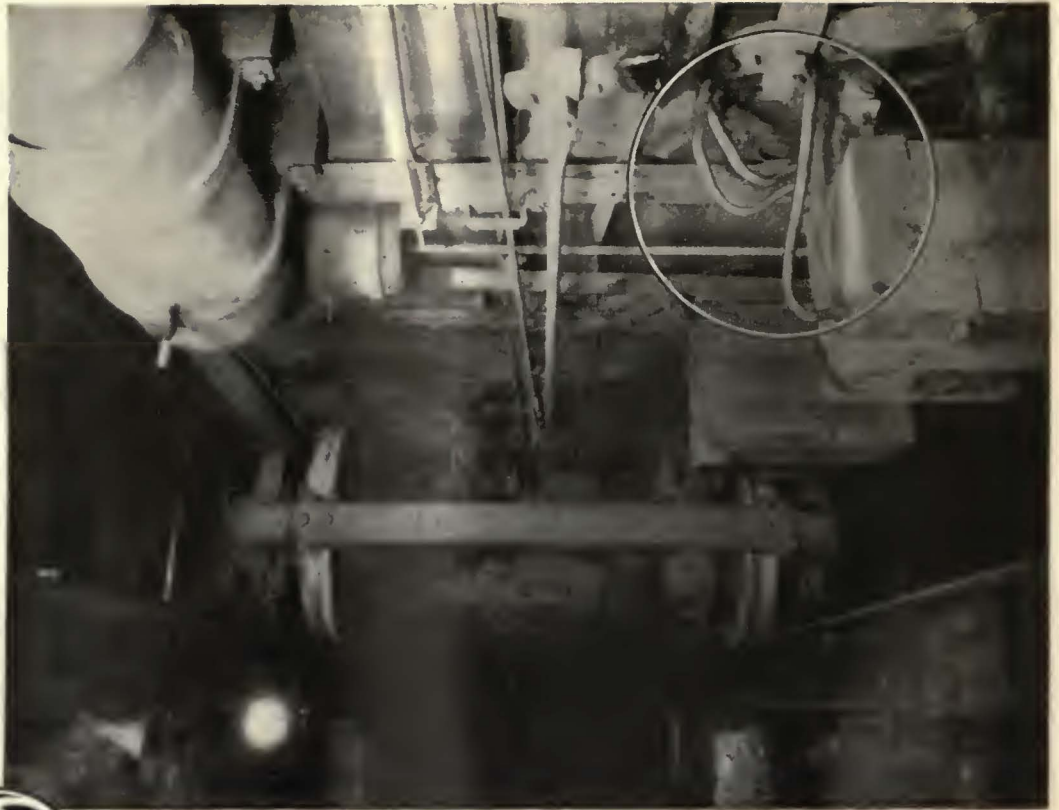
Blue-prints and full details will be furnished gladly to interested electric railway executives.

CINCINNATI CAR COMPANY  
Cincinnati, Ohio



CINCINNATI  
*New*  
CARS

*A step ahead of the modern trend*

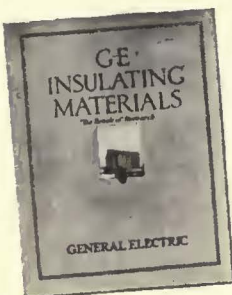


# Paragon Tape

stands up under dampness  
and hard knocks



IN THIS CATALOG



a complete listing of the following G-E Insulating Materials. Write for it.

Insulating Varnishes  
Finishing Varnishes  
Insulating Oils  
Stickers  
Shellacs  
Paints  
Filling Compounds  
Sealing Compounds  
Varnish Treated Cloths  
Varnish Treated Cloth Tapes  
Insulating Fibers  
Insulating Papers  
Flexible Varnished Tubing  
Motor Tubing  
Asbestos and Cotton Tapes  
Friction and Rubber Tapes  
Prepared Paper Tapes  
Cords and Twines

When you want to be sure about cables exposed to moisture and abrasion, use G-E Paragon Tape. It is unexcelled as a binder and as a protecting weather-proof covering.

It is one of the many high-quality G-E Insulating Materials—the result of research—which help to flatten the maintenance cost curve.

Specify General Electric insulating materials—the same as used in original G-E equipment. You will find them dependable as well as economical.

## SERVICE

All G-E Insulating Materials are sold through one prompt-to-serve source—the G-E Merchandise Distributor. His stocks are complete. He can supply you from his warehouse. Deliveries are speedy.

800-8

# GENERAL ELECTRIC

MERCHANDISE DEPARTMENT, BRIDGEPORT, CONNECTICUT

# Eastern Massachusetts Street Railway Co.



## orders ECONOMY Meters

with Inspection Dials  
for 50 New Deluxe  
Cars

THIS progressive property was completely equipped with meters in 1918. In 1922 it standardized on the Inspection Dial, and since that time every new car purchased has been equipped with an Inspection Dial ECONOMY Meter.

**T**HIS device actually tells the motorman and the management whether power has been saved or wasted, and how much.

That, in brief, is the underlying reason for the success of the ECONOMY Meter.

The ECONOMY "Power-saving" and Car Inspection Meter provides a method that accurately and automatically shows when car inspection is needed. It also shows at a glance how much more work a car can do before inspection is needed, or, in case of a road failure, how much work the car has done previous to the failure. All this without any clerical labor.

The ECONOMY Meter is a rugged

device which requires remarkably little maintenance. It is a standardized product, easy to maintain on a railroad at a cost averaging less than \$2.00 per year, per meter.

More than two hundred street and interurban railways are equipped. Whether you generate or purchase power, the savings effected through the use of ECONOMY Meters are real savings for the Transportation, Electrical and Mechanical departments.

\* \* \*

**I**NSTALL ECONOMY Meters now. You can have two years to pay. Meanwhile the meters will earn over twice their cost. May we tell you more?

## ECONOMY ELECTRIC DEVICES COMPANY

37 W. Van Buren St., Chicago

Sangamo Economy Meters  
Peter Smith Heaters

Woods Fare Boxes  
Bemis Boyerized Truck Specialties

Haskelite and Plymetl

# Why pay a staggering premium for track maintenance



# Modern new equipment turns the loss to dividends

Every road that has even partially replaced obsolete cars with new equipment tells the same story—that light weight modern cars, fully capable of handling traffic peaks, result in track and equipment maintenance savings of from 5 to 54%. The average on 20 representative roads is over 27%.

And this item of maintenance is but one of many savings resulting from an adequate modernization program. St. Louis Quality Cars will help your property achieve them. It will be our pleasure to prove it.

ST. LOUIS CAR COMPANY

St. Louis, Mo.

*built by*

## St. LOUIS Car Co.





## Looking into controller maintenance in New Orleans

A year's thorough trial demonstrated to the New Orleans Public Service, Inc. that the G-E Line Breaker equipment with the improved LB Controller Handle

- greatly reduced burning in the controller (no more stubbing fingers)
- prevented failure of pawls to engage in star wheel, avoiding held-open circuits
- reduced controller complaint cards
- materially reduced time for making repairs
- expedited operation (easier to "creep" and to control car with improved low handle)



*For*  
Modern Equipment Standards

The tests were made on three different cars, covering a total of 79,000 miles. The controller maintenance of these cars was one-fourth that of three others in similar service but not so equipped.

As a result, 342 K-36 controllers are being equipped with LB control devices.

# GENERAL ELECTRIC

# Electric Railway Journal

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

Published by McGraw-Hill Publishing Company, Inc.

CHARLES GORDON, *Editor*

Volume 69

New York, Saturday, April 9, 1927

Number 15

## Exhibits to Open on Saturday at This Year's Cleveland Convention

WITH the approval of the executive committee an important departure from the practice followed at former annual conventions has been inaugurated by this year's exhibit committee of the American Electric Railway Association. Exhibits will be set up, manned and opened for inspection at noon on Saturday, Oct. 1. Delegates who arrive early will have an opportunity to inspect exhibits Saturday afternoon and Sunday, before the opening of the convention on Monday. This is in addition to Wednesday of convention week, which, as in former years, has been set aside for visiting exhibits.

An important forward step has been taken. As the convention has grown rapidly in size it has become increasingly difficult for railway men in attendance to view the exhibits thoroughly without neglecting the business sessions. When the practice was started several years ago of setting aside one full day to inspect the exhibits a considerable improvement was made. The new plan of opening them on Saturday is another move in the right direction.

Time spent among the exhibits at the convention is time well invested. Many thousands of dollars are expended each year by manufacturers to bring their equipment to the convention for inspection by operating men. The cost to operating companies for sending executives and employees to the convention is likewise heavy. Unless adequate time is available for thorough examination of manufacturers' products and for attendance at the convention sessions, full value is not derived by the industry from these expenditures.

Of course, the new arrangement will not be productive of improved results unless operating men take advantage of it by getting to Cleveland on Saturday or Sunday. Only through the co-operation of railway executives can this be assured. Get your men to Cleveland early! See to it that they go over the exhibits thoroughly! The time and effort put in will be more than amply repaid in new ideas and new enthusiasm.

## A Big Step in Weight Reduction

ENTIRELY new possibilities in car design are opened up by the success which has so far marked the operation of the experimental aluminum car built by the Cleveland Railway and exhibited at the convention last fall. By the use of aluminum alloys as presented in an article elsewhere in this issue, the weight of a large city car more than 51 ft. long and equipped with four motors has been reduced to only slightly more than 30,000 lb. That is indeed light weight with a vengeance! The car was built entirely as an experiment. But after more than four months operation under the

severe conditions encountered in Cleveland, it has developed no structural weaknesses.

Before attempting to draw conclusions from the Cleveland experiment it should be understood that this car was designed for steel and not for aluminum construction. When the railway decided to build an aluminum car for exhibit at the convention, time did not permit much more than merely the substitution of aluminum for steel, part for part. It seems reasonable to assume, therefore, that a car designed originally for aluminum would permit more scientific utilization of the light-weight material.

Cleveland has without doubt pioneered a most important experiment. There seems ample reason to look forward to a more general use of aluminum for car construction in the near future. If this becomes practicable, an attractive reduction in operating costs would result from the very large saving in weight that can be made.

## Facts in Annual Reports Are Encouraging

OPTIMISM does not exude from the pages of the annual reports of the electric railways for 1926 so far received for digest by the JOURNAL, but it is not difficult to find very encouraging signs in them. Everything considered, the best all-around showing, perhaps, is contained in the statement of the Chicago Surface Lines. That property carried not only the largest number of passengers in its history but made its best financial showing in any year except one. This may be attributed to the determination of the management to carry on just as it had in the past, no matter what the outcome of the franchise negotiations.

One thing that stands out as most heartening is the tendency shown in practically all of the reports toward no lessening in the number of passengers carried. This is true, as before mentioned, of Chicago, and is true in lesser degree in the case of the companies in Cincinnati, Milwaukee and other cities. A striking fact of the Philadelphia report was that the number of passengers carried per trainman in that city increased from 72,405 in 1911 to 151,175 in 1926. Rides per capita in Philadelphia have increased from 329 in 1911 to 480 in 1926.

Not only this, but the reports reflect the good work that is being done in accident prevention. The Louisville Railway's accidents have been reduced from 3,272 in 1922 to 1,157 in 1926, and the number of miles operated per accident has been increased from 3,323 in 1922 to 10,386 in 1926. On the Market Street Railway of San Francisco expenses incident to injuries and damages in 1926 were 30.18 per cent less than in 1925. Statistics indicate that collision accidents per car-mile in San Francisco were reduced 26 per cent.

Both the Market Street Railway and the West Penn

Railways gave important facts in the annual reports about the work being done toward strengthening their financial positions. The conditions surrounding the Market Street Railway are in many respects peculiar, but despite the low fare at which the company is required to operate and other unfavorable conditions, the funded debt in the hands of the public was reduced \$634,000 during the year. The West Penn Railways retired \$5,548,500 of funded obligations. On Sept. 1, 1926, the company called and retired all of its outstanding three-year 6½ per cent gold debentures due April 1, 1927, aggregating \$3,500,000, funds having been made available to its treasury through reimbursements by certain subsidiary companies to which temporary advances had previously been made for construction. In addition, all of the company's outstanding first equipment trust 8 per cent notes of 1921, aggregating \$120,000 were retired on Oct. 1, 1926.

The number of reports available in pamphlet form for digest is not so very large and the method of presentation of the data contained in them is so dissimilar that a basis of real comparison between companies is not afforded even if it were deemed advisable, but the conclusion is inescapable from the digests of the reports so far presented that the managements are for the most part thoroughly alive to the opportunity which is presented for the intelligent and determined application of ideas that give promise of furthering the interests of the companies themselves and of constantly increasing the essentiality of the properties to the welfare of the people in the communities in which they operate.

### Revival of Brady Award Should Stimulate Safety Work

CONSIDERABLE interest attaches to the announcement just made that the Anthony N. Brady safety award has been revived after remaining dormant since it was awarded to the Connecticut Company in 1916. The American Museum of Safety has taken charge of the contest and the next award of the medals will be for the calendar year 1926.

The conditions have been revised materially. Formerly a rather complicated series of computations was necessary to determine the winner, and the procedure made it difficult for the smaller companies to present their claims. Under the new conditions there will be three medals as before, but they will be given as first prizes to operating companies in three classes, grouped according to the number of vehicle-miles operated. The method of presentation has been modified greatly so that it will be possible for all electric railways, large or small, to present their own cases in the way that will bring out the best consideration of their records and the conditions under which their accomplishments have been made.

The plan under which the contest is to be conducted contemplates the preparation of a brief by each contestant presenting the accomplishments in gaining good will, improvements in maintenance and operating practices and promotion of sanitation and health, as a result of better safety practices. This will permit great latitude in presentations and will allow the committee in charge of the award to judge the work by a definite system of rating each of the six factors outlined in the conditions of the contest. The committee will also take into consideration any other factors or conditions

which may in its judgment have a bearing on the relative accomplishments of the contestants in the field of safety.

It is desirable that as many railways as possible enter the competition. The conditions are not onerous and the amount of work that must be done in preparing the presentations should not be a hardship to any company. Separation of the companies into three groups, depending on size, gives the smaller companies an equal chance with the larger ones.

### I.C.C. Split on Valuation Issue

COMMENT has been provoked in railroad and financial circles by the majority opinion of the Interstate Commerce Commission in the so-called St. Louis & O'Fallon Railroad valuation case, one in which the principles involve railroad properties valued at billions. It is the first decision of the commission interpreting and applying the so-called recapture clause of the transportation act of 1920. By a vote of six to four, the commission held, in effect, that the value of the property of a railroad for rate-making purposes, as determined by the commission for 1914, approaches more nearly the reasonable and necessary investment in the property than the cost of reproduction of it. The recapture clause provides for the payment to the federal government of one-half of the net railway operating income of a railway system in excess of 6 per cent on its value for any year following the passage of the act. No definite rule of valuation was laid down in the transportation act of 1920. So the commission proceeded on its own initiative.

The majority opinion held that Congress intended to fix values of railroad properties for recapture purposes without awaiting completion of final valuation under the provisions of the valuation act. It also held that, for that purpose, it is warranted in basing its valuation on its tentative valuation figures of 1919 (based on 1914 unit prices) as far as available, plus net additions to property in succeeding years at actual cost, less depreciation, without giving effect to the cost of reproducing the original property at present-day prices.

According to one of the commentators who summarized the long decision, the majority opinion admitted that the "cost of reproduction now at prices current on valuation date" had been laid down as a rule in previous court decisions, but it objected that such a basis of rate making would prevent stability of rates; that in 1920, for instance, valuation at current prices would have required increase of 114.64 per cent in "the element of rates and charges" over the requirements as of 1914, in order to insure the "fair percentage" of return, whereas in 1921 there would have been a reduction of 14.38 per cent, and in 1922 a further reduction of 18.23 per cent. This the majority opinion deemed unjust and unworkable, and between that method and the use of 1914 prices as a base, no intermediate process was "possible which is capable of being applied to any rule independent of the caprice of those who apply it."

It might seem offhand that this case is without interest in the electric railway and utility field, but that is not a fact. In the first place, the commission, as indicated previously, was divided on the basis of a six to four vote, and in the second place the minority opinion rested its conclusion squarely on the "law of the land" as embodied in previous Supreme Court decisions. The



minority cited particularly one earlier leading decision, which acclaimed that, in valuing property used in serving the general public, consideration should be given to "present as compared with original cost of construction." Reaffirmation of this principle in the Minnesota rate case was further cited, also the Supreme Court's reversal of a lower court's decision in a public utility value, on the ground that the lower court had failed to accord "any weight to the greatly enhanced cost of material, labor, supplies, etc., over those prevailing in 1913, 1914 and 1916." The minority opinion bluntly declares that the commission's majority "refuse to follow" these clearly enunciated and definitely established principles. The basic use of 1914 prices is not challenged, but there is strong dissent from using them "in determining value in 1923 without application of corrective factors." The minority concludes that "if the law needs change, let those who made it change it. Our duty is to apply the law as it stands."

So the grounds become plain on which the radical divergence of opinion is based. They indicate clearly that the final and proper course of the commission cannot be determined except by the Supreme Court itself. In this respect it is quite clear that the issues were treated as test cases as to the method of ascertaining the value of roads for recapture purposes. The majority recognized that "having in mind the whole railroad situation, the decision is of the greatest consequence from the public and the private viewpoints." Both on that account and on account of the stand which the majority and the minority took in the matter, the case, despite the peculiarities of the terms of the transportation act, are of interest even to those who at first appear to be only remotely concerned with valuation problems.

### Those Who Came to Scoff Remained to Ponder

**S**KEPTICS who think that accidents are an inevitable accompaniment to electric railway operation certainly would have experienced a change of heart had they attended the April meeting of the Metropolitan Section, American Electric Railway Association, reported in this issue. Representatives of three important electric railways gave definite figures showing what had been accomplished by sustained effort on their properties. Since the beginning of an organized safety campaign on the Third Avenue Railway, New York City, fifteen months ago, the number of accidents has been approximately 1,400 less than during the preceding fifteen months. The total number of accidents on the Brooklyn City Railroad during the past eight months was 8,275 as compared with 9,518 occurring during a like period before the inauguration of the present bonus plan. In Louisville, where formerly one accident occurred for every 1,800 car-miles operated, the January, 1927, ratio was one per 19,000 car-miles. Claims paid by the Louisville Railway have been reduced from 7½ per cent of the gross revenue to 4 per cent. Evidence more convincing than these figures could hardly be found to show that the efforts made in accident prevention are thoroughly worth while from an economic standpoint.

While admitting that safety work was first undertaken for economic reasons, James P. Barnes, president Louisville Railway, pointed out that the humanitarian

motive is now paramount. Much as his company has accomplished in the way of financial saving, he feels that the saving of life and limb has been of far greater importance. Moreover, united work in accident prevention has created a closer bond between the employee and the officials of the railway. Truly, in the case of this meeting it might be said that those who came to scoff, if any such there were, remained to ponder upon the substantial benefits resulting from organized safety work.

### Safety Platforms an Aid to Movement of All Traffic

**T**O THE prospective passenger waiting for a street car in the midst of a stream of rapidly moving vehicular traffic a raised loading platform is a great boon. Use of such safety platforms in most of the large cities of this country undoubtedly has prevented a great number of accidents. For this reason alone the moderate cost of construction is more than justified.

But the safety platform is more than a means of preventing accidents. It is a definite aid to the movement of all traffic. A nation-wide survey made by *ELECTRIC RAILWAY JOURNAL*, presented elsewhere in this issue, shows that executives of railway companies in cities where platforms are used are practically unanimous in the opinion that they speed up the operation of both cars and other vehicles.

Where loading platforms are used passengers are ready to board the car immediately it comes to a stop. Otherwise many of them wait on the sidewalk and make their way from the curb to the center of the street while the car waits. Moreover, stop-watch checks show that it takes less time for a passenger to board a car from a platform than from the street. Thus, there is a double saving of time, which in the aggregate amounts to many car-hours per day.

Vehicles other than cars should not be allowed to operate on the tracks inside the platforms. Otherwise cars are unable to draw up alongside the platform to their proper position, and one of the chief advantages of the platform is lost. The survey shows that the importance of this regulation is realized in most cities, although a few permit this harmful practice.

Loading platforms facilitate movement of other vehicles nearly as much as that of street cars. Most prospective car riders make their way from the sidewalk to the safety platform while the traffic is halted. Thus when the traffic is moving, greater speed can be attained with equal safety because of the small likelihood of pedestrians dashing out from the curb to reach the car tracks. Passengers alighting from cars have a safe place to stand and it is unnecessary for motor traffic to stop every time the car stops. All this has an important effect in relieving congestion where traffic is dense.

No uniform practice was disclosed by the survey in regard to paying for the construction of safety platforms. In some cities the railway has paid the cost, but in most instances this has been done by the municipality. As the platforms are built on public property and benefit not only the car riders but also the motorists, their construction appears to be a reasonable municipal expense. So favorable has been the experience of cities where these platforms have been used that municipal officials who understand their advantages should be quite willing to authorize their installation.



**Methods of Lighting  
Safety Platforms  
and Protecting  
Waiting Passengers  
from  
Vehicular Traffic**



No. 1. Short vertical pieces of rail protect passengers on Cincinnati platforms.

No. 2. Covered platform 220 ft. long on Woodward Avenue, Detroit.

No. 3. Mushroom electric lights mark safety isles in Atlantic City.

No. 4. Rugged abutments are

placed at both ends of Wilkes-Barre safety isles.

No. 5. High light on continuous safety isle at Providence.

No. 6. Substantial steel and concrete bumper at Atlanta.

No. 7. Flashing beacon used in Baltimore.

No. 8. Concrete bumper on safety isle at Terre Haute.



Concrete loading platform on Market Street, San Francisco, the first city to install these aids to railway operation

## Safety Platforms Aid Traffic Movement

Survey shows use of raised loading areas alongside street railway tracks in 30 cities has greatly facilitated operation of cars and all vehicular traffic. Details of construction and lighting are given

*By John A. Miller, Jr.*

*Associate Editor Electric Railway Journal*

**R**AISED loading platforms, or "safety isles," alongside street railway tracks have come into use in many of the larger cities of the United States during the past few years. San Francisco, where such platforms were installed 22 years ago, was the pioneer in this development. Today they are used in Chicago, Philadelphia, Detroit, Los Angeles, Cleveland, St. Louis, Baltimore, Pittsburgh, Newark, Washington, Cincinnati, Indianapolis and numerous other cities. In order to secure definite information concerning the construction and use of these platforms a survey has been made by *ELECTRIC RAILWAY JOURNAL* and the results are given in this article. This shows that officials of railways in 30 of these cities are agreed in thinking that loading platforms are a substantial aid to the expeditious movement of all traffic, as well as a great protection to the car riders and pedestrians.

Dimensions of the loading platforms vary widely in different cities, but the general design usually is much the same. An accompanying table gives the principal dimensions of loading platforms used by 27 railways in 30 cities. Materials used in their construction and the agencies by which they were built also are listed. Except in a few instances the material used is concrete. The Capital Traction Company builds platforms of

wood on Pennsylvania Avenue, Washington, D. C., on account of the necessity of removing them during parades. Wood platforms are used also at Cambridge and Worcester, Mass.; Akron, Ohio, and Louisville, Ky. Platforms of precast reinforced concrete slabs are used by the United Railways & Electric Company of Baltimore. These are built in 8-ft. sections at the company's material yard, as shown on page 644.

In length the platforms vary from 18 ft. to 215 ft. Those shorter than 50 ft. are the exception. Lengths between 50 ft. and 100 ft. are the most common. Among the users of platforms more than 100 ft. in length are the Northern Ohio Power & Light Company at Akron, where the platforms are 150 ft.; the Capital Traction Company, 192 ft.; the Worcester Consolidated Street Railway, 200 ft.; the Los Angeles Railway, 215 ft., and the Department of Street Railways, Detroit, 220 ft. Triple or quadruple berthing of large cars is possible at these long platforms, while elsewhere the usual practice is double or single berthing. At the other extreme of size is Seattle, where the platforms are only 18 ft. long. This length has been adopted because all passengers board and alight at the rear end.

Widths of loading platforms vary between 3 ft. and 8 ft. Most common are widths of 4 ft., 4 ft. 6 in. and 5 ft.

## Principal Dimensions of Loading Platform

Railway	Length	Width	Height from Pavement	Distance from Rail
Atlantic City & Shore Railroad	50 ft.	4 ft. 0 in.	5½ in.	2 ft. 3 in.
Boston Elevated Railway	100 ft.	5 ft. 0 in.	6 in.	2 ft. 3 in.
Capital Traction Company	48 ft. to 192 ft.	4 ft. 4½ in. and 6 ft. 0 in.	8½ in.	2 ft. 0 in.
Chicago Surface Lines	50, 70 or 100 ft.	4 ft. 0 in.	6 in.	2 ft. 9 in.
Cincinnati Street Railway	50 ft.	4 ft. 6 in.	6 in.	1 ft. 6 in.
Cleveland Railway	Various	3 ft. 6 in. and 4 ft. 0 in.	6 to 8 in.	2 ft. 1 in. to 2 ft. 2 in.
Department of Street Railways, Detroit	Various	8 ft. 0 in.	6 in.	1 ft. 10 in.
Georgia Power Company	100 ft.	4 ft. 6 in.	8 in.	1 ft. 10 in.
Indianapolis Street Railway	108 ft.	6 ft. 0 in.	4 in.	2 ft. 1 in.
Los Angeles Railway	50 to 215 ft.	3 ft. 2 in. to 4 ft. 5 in.	5, 8, 9 in.	2 ft. 6 in. to 2 ft. 10 in.
Louisville Railway	80 ft.	4 ft. 6 in.	8 in.	2 ft. 0 in.
Market Street Railway & Municipal Railway, San Francisco	60 ft. 2 in.	6 ft. 0 in.	6 in.	2 ft. 8 in.
Morris County Traction Company	35 ft.	4 ft. 0 in.	5 in.	.....
Northern Ohio Power & Light Company	50 to 150 ft.	4 ft. 0 in.	5½ in.	2 ft. 4 in.
Pittsburg Railways	50 to 100 ft.	4 ft. 6 in.	5 to 6 in.	1 ft. 4 in.
Philadelphia Rapid Transit Company	80 ft.	Various	4 to 5 in.	1 ft. 10 in.
Public Service Railway of New Jersey	50 to 100 ft.	5, 6, 7 and 8 ft.	4 to 8 in.	1 ft. 10½ in. to 2 ft. 5 in.
San Diego Electric Railway	30 ft.	6 ft. 6 in.	8 in.	2 ft. 4 in.
Schenectady Railway	80 ft.	6 ft. 0 in.	6 in.	2 ft. 0 in.
Seattle Municipal Railway	18 ft.	6 ft. 0 in.	6 in.	.....
Terre Haute, Indianapolis & Eastern Traction Company	80 ft.	5 ft. 0 in.	4 in.	1 ft. 6 in.
United Electric Railways, Providence	4,000 ft.	3 ft. 6 in.	6 in.	2 ft. 6 in.
United Railways & Electric Company, Baltimore	Various	4 ft. 0 in.	6 in.	2 ft. 0 in.
United Railways, St. Louis	100 ft.	4 ft. 7 in.	Slope 2 to 5½ in.	1 ft. 7 in.
Wilkes-Barre Railway	60 ft.	4 ft. 0 in.	6 in.	2 ft. 1½ in.
Worcester Consolidated Street Railway	80 to 200 ft.	3 ft. 0 in. to 6 ft. 0 in.	8 in.	1 ft. 10 in.

Considerable variation occurs also in the distance from the gage line of the rail to the inside edge of the platform. This distance is governed by the clearance line of the car. To avoid accidents platforms usually are so placed that an unfolded step will not overhang more than a few inches, but this practice is not always followed. At Pittsburgh the distance is 1 ft. 4 in. At Cincinnati and Terre Haute it is 1 ft. 6 in. From these figures the distances range upward to 2 ft. 9 in. at Chicago and 2 ft. 10 in. at Los Angeles. Probably the average distance is about 2 ft.

Height from pavement to top of platform varies from a minimum of 4 in. to a maximum of 9 in. Six inches is the most usual height. A sloping platform is used at St. Louis. On the side nearest the rail its height is only 2 in., while on the outside the height is 5½ in. A sectional view is shown in accompanying drawing.

## MUNICIPALITIES PAY COST OF BUILDING PLATFORMS

Cost of construction of loading platforms is borne by the municipalities in most instances, although there are also a number of cities where the railway has paid the entire expense. At Philadelphia, San Diego and



Precast slabs for loading platforms built by United Railways & Electric Company, Baltimore

at Worcester the cost is shared by the municipality and the railway. The city of Los Angeles has paid for the building of combination comfort stations and safety isles, but the ordinary loading platforms are paid for by the railway.

Lighting of safety isles and protection against being overrun by vehicular traffic are prominent features of design. Nearly all of the platforms are provided with some sort of warning lights. In many instances they are placed only at the end toward approaching vehicles, but usually they are to be found at both ends. Often ornamental iron posts are employed as shown in accompanying sketches. Oil lanterns are utilized by the Capital Traction Company, the Louisville Railway, the Terre Haute, Indianapolis & Eastern Traction Company, the Georgia Power Company and the Worcester Consolidated Street Railway to light safety isles in the cities where these companies operate. An advantage claimed for this method is its independence of the general street lighting system. In case of failure of the street lights, the warning lanterns on the loading platforms continue to burn. At Seattle the lamps on the safety isle are tapped from the trolley wire. Gas lights are used on safety isles in some of the New Jersey suburban towns in which Public Service Railway operates. In Atlantic City the concrete loading platforms have mushroom electric lights at both ends. Flashing beacons are used in Chicago, Pittsburgh, Providence, Baltimore and St. Louis. Red reflectors at the end toward approaching traffic serve as auxiliary warning devices on numerous platforms.

## PROTECTION AN IMPORTANT ELEMENT

To protect people waiting on the platforms from vehicular traffic, bumpers of various kinds are generally installed. Ordinarily a bumper is placed at only the approach end of the platform, although in some instances bumpers have been built at both ends, as was done in the Wilkes-Barre safety isles shown in an accompanying illustration. Concrete or reinforced concrete is frequently used for this purpose. Pieces of old rail often are buried

Used by 27 Railways in 30 Cities

Material	Built by	Lighting	Type of Protection	Period of Use
Concrete	City	Mushroom Electric	None	3 years
Wood	Railway	None	Pipe stanchions	1½ years
Wood	Railway	Oil lanterns	None	10 years
Concrete	City	Flashing Beacon	Bumpers	3 months
Concrete	City	Electric beacon	Short pieces of rail	6 months
Concrete	City	Electric lights	Concrete bumper	.....
Concrete	City	Electric lights	Concrete bumper	7 years
Concrete	Railway	Oil lanterns	Concrete bumper	1 year
Concrete	City	Electric lights	None	10 years
Concrete	City and railway	Electric lights and reflectors	None	5 years
Wood	Railway	Oil lanterns	Wood and concrete pedestal	1 year
Concrete	City	Electric lights	Concrete bumper	20 years
Concrete	City	Electric lights	Reinforced concrete post	3 years
Wood and concrete	Railway	Electric lights	Pipe stanchions	2 years
Wood	Railway	Flashing beacons and reflectors	None	5 years
Wood	City	Connected with traffic lights	Stanchions	1½ years
Concrete	City	Electric and gas lights	Concrete bumper	6 years
Concrete	City and railway	Electric lights	Concrete bumper	1½ years
Concrete	City	None	Pipe stanchions	5 months
Concrete	Railway	Tap from trolley	Concrete bumper	6 years
Concrete	Railway	Oil lanterns	Concrete bumper	2 years
Concrete	City	Flashing beacons	None	4 months
Precast concrete	Railway	Flashing beacons	None	4 years
Concrete	City and railway	Flashing beacons	Concrete bumper	6 months
Concrete	Railway	Electric lights	Concrete bumper	6 months
Wood	City	Oil lanterns	None	3 months

in the concrete to give added strength. At Cincinnati short pieces of vertical rail imbedded in the pavement create a substantial barrier. At Newark the concrete bumper has been extended to form a bench on which waiting passengers may sit. Sometimes these bumpers are painted with black and white stripes to attract attention. The Georgia Power Company in Atlanta utilizes the bumper to carry a list of the car lines passing that point. Pipe stanchions and chains are used by the Boston Elevated Railway and the Northern Ohio Power & Light Company. On the other hand, in a number of cities reliance is placed entirely on the height of the platform above the pavement to prevent encroachment by vehicular traffic.

CONTINUOUS SAFETY ISLE AT PROVIDENCE

Perhaps the most unusual type of loading platform disclosed by this survey is one located on North Main Street, Providence, R. I. This extends alongside the tracks of the United Electric Railways from Grand View Street to Eighth Street, a distance of 4,000 ft. It is built of concrete, 3 ft. 6 in. wide and 6 in. high. At intersecting streets there are gaps in the platform to permit vehicular traffic to cross from one side of North Main Street to the other. At the end of these

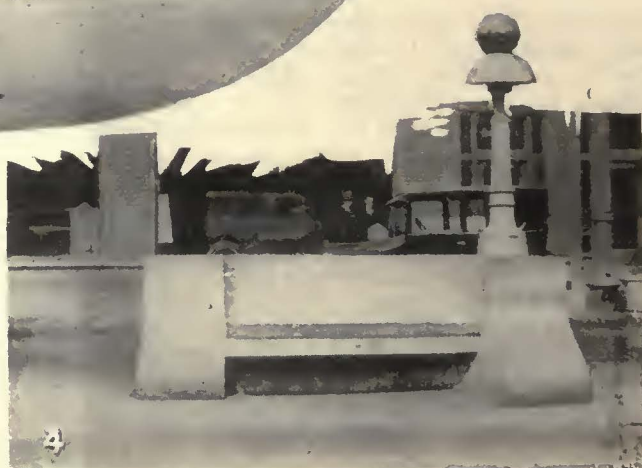
platforms and in the middle of the intersecting streets flashing beacons have been placed. The effect of this construction is practically equivalent to providing a reserved strip in the center of the street for railway operation.

Opinion of railway officials is quite definite that the minimum width of roadway between curbs is 44 ft. where loading platforms are to be installed alongside double track. Assuming that a double-track street railway utilizes 18 ft. of roadway, there remains 26 ft. for other vehicles, of which 13 ft. will be on each side of the track. If the width of the platform is 4 ft., there remains a 9-ft. lane for vehicular traffic. A few officials consider it desirable to have an even wider roadway between curbs where platforms are used, specifying street widths up to 60 ft. Again, assuming 18 ft. for the railway and 4 ft. for each platform, there remains a vehicular roadway of 17 ft. on each side, which may be considered sufficient for two lanes of traffic.

In harmony with this conclusion is the opinion that the roadway should be at least 36 ft. from curb to curb in a street where loading platforms are used alongside a single track. Assuming that 10 ft. is required for the cars and 4 ft. for the platform, there remains a 9-ft. vehicular roadway on each side of the street.



Wood platforms used by Capital Traction Company on Pennsylvania Avenue and Fifteenth Street, Washington, D. C., are built in sections to facilitate removal during parades



**Loading platforms are used extensively along the lines of Public Service Railway, Newark, N. J.**

- No. 1. Platforms at Broad and Market Streets, the busiest intersection in the city, are 96 ft. in length.
- No. 2. Latest type platform, which accommodates two cars.
- No. 3. In the suburbs some platforms are lighted by gas.
- No. 4. Combination concrete bumper and seat at end toward oncoming vehicles.
- No. 5. Lamp post at unprotected end of platform.
- No. 6. Passenger boarding front entrance car at platform.



In congested areas loading platforms speed up railway service because they "enable people to be at the boarding point as the cars approach instead of standing on the sidewalk and then threading their way through a maze of traffic to reach the car after it has stopped." Such is the opinion of A. E. Potter, president United Electric Railways, Providence, R. I. A similar opinion is expressed by J. B. Stewart, Jr., general manager Cincinnati Street Railway, who says: "Passengers are on the platform ready to board the car instead of being on the curb, which delays the car while passengers are trying to get across among the automobiles."

According to A. T. Warner, general manager in charge of traffic Public Service Railway, Newark, N. J.,



**Types of loading platforms used in Los Angeles, Cal.**

No. 1. Three-car platform at heavy loading. Length, 150 ft.; width, 4 ft. 6 in.; height, 8 in. Built by Los Angeles Railway.

No. 2. Obelisk protection at end of platform. Length, 50 ft.; width, 4 ft. 5 in.; height, 5 in. Built by Southern Pacific Company.

No. 3. Loading platform on private right-of-way in suburbs.

No. 4. Raised concrete platform alongside reserved strip. Length, 50 ft.; width, 3 ft. 2 in.; height, 5 in. Built by Los Angeles Railway.

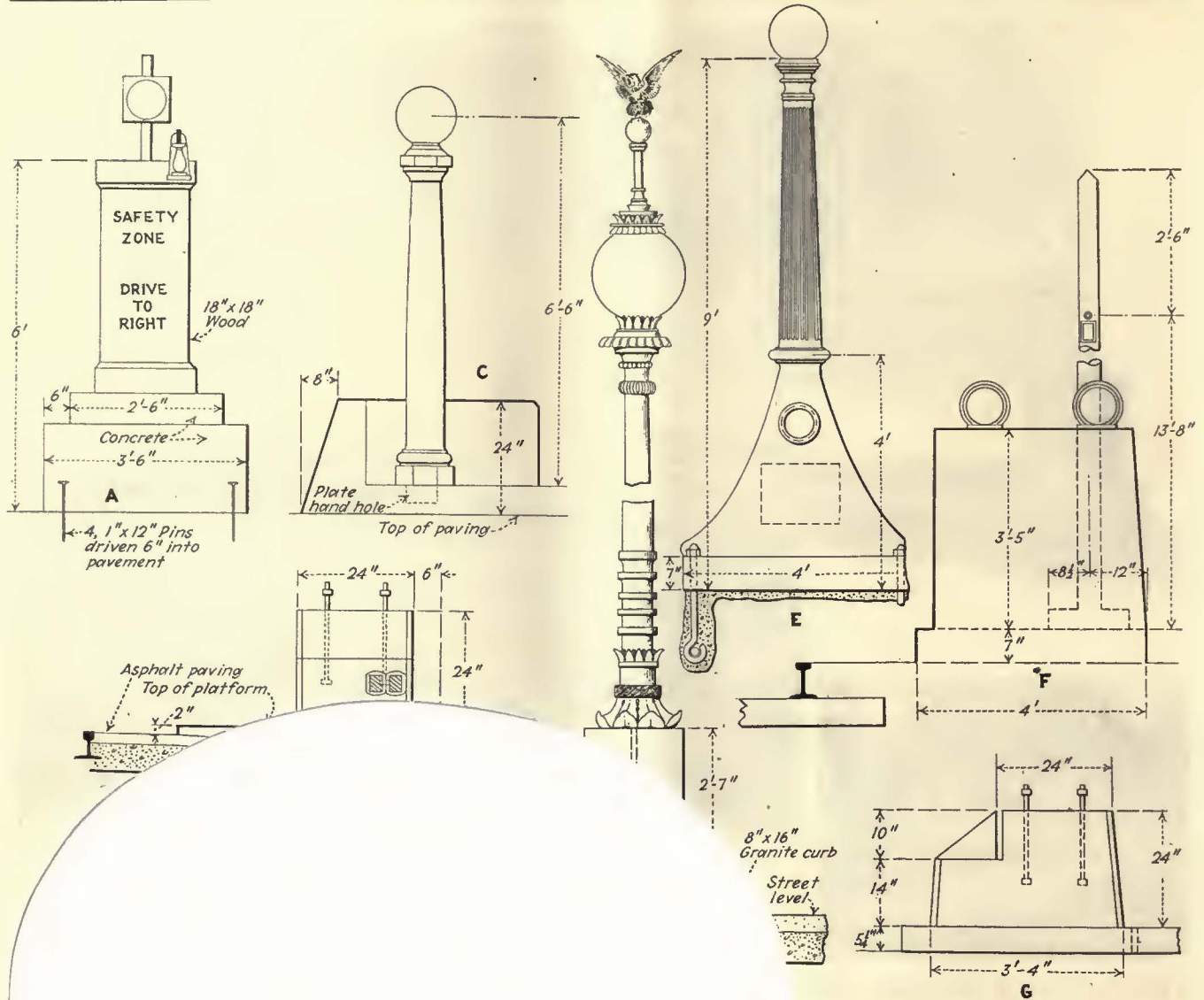
No. 5. Combination comfort station and raised loading platform. Length, 92 ft.; width, 15 ft. to 31 ft.; height, 5 in. and 11 in. Built by city.

"There is no question but what a safety isle properly located has a number of advantages both from the public point of view and that of the operating company. First, it definitely establishes a point at which the cars will stop. Second, and of equal importance, it provides a haven of refuge adjacent to the track where prospective passengers can rest in safety while waiting for their cars. It also speeds up loading by making it possible for the passenger to be at one point ready to board the car when it arrives there." Stop-watch checks made at Newark show that it takes considerably less time for a passenger to board a car from a platform than the pavement.

Among others who expressed the opinion that the use of loading platforms speeds up railway service are Samuel Riddle, vice-president Louisville Railway; M.

McCants, general manager Market Street Railway, San Francisco; T. H. David, principal assistant engineer Terre Haute, Indianapolis & Eastern Traction Company; R. E. Weber, engineer way and structures Schenectady Railway; D. A. Scanlan, general superintendent of railways Northern Ohio Power & Light Company; O. G. Schultz, general manager Morris County Traction Company; S. E. Mason, general manager San Diego Electric Railway; D. W. Henderson, general superintendent of railways, Seattle; A. J. Purinton, general superintendent Atlantic City & Shore Railroad; H. R. Whitney, vice-president Worcester Consolidated Street Railway, and C. A. Smith, superintendent of roadway Georgia Power Company.

On the other hand, doubt was expressed by E. J. McIlraith, staff engineer Chicago Surface Lines, and



k safety platforms  
 installed at Atlanta, Ga.  
 F. End view of loading platform at East  
 Cleveland, Ohio.  
 G. Side view of bumper on loading plat-  
 form in St. Louis, Mo.

R.  
 Rail  
 use of  
 the diffic  
 signal lights, the  
 sible advantages of the  
 is concerned.

Opinion as revealed by the survey was practically unanimous that raised loading platforms are superior to safety zones marked by paint, buttons or stanchions. W. R. Dunham, Jr., executive engineer Department of Street Railways, Detroit, believes that platforms are superior, but not sufficiently so to warrant the additional expense. If stanchions are rugged enough to prevent the encroachment of vehicular traffic the safety zone is as satisfactory as the raised platform, according to C. W. Wilson, research manager Pittsburgh Railways. Safety zones marked by cast-iron buttons set in the pavement are used to a considerable extent. More than 150 such zones have been established in San Francisco, according to M. M. O'Shaughnessy, city engineer. A post type safety zone built in that city at Market and Stockton Streets in 1925 has proved very

Detroit, Denver, Terre Haute and San Francisco are other cities using buttons or posts to mark safety zones. The majority opinion in favor of raised platforms, however, is well expressed by R. H. Dalglish, chief engineer the Capital Traction Company, who says: "We consider the platform much more desirable than the painted safety zone as it affords better protection to waiting passengers."

Practice concerning the operation of vehicles other than cars inside the loading platforms is not uniform throughout the country. In some cities it is permitted. At San Francisco it is forbidden on Market Street and permitted elsewhere. In Los Angeles automobiles intending to make a left turn are required to stop inside the loading platforms and wait for the signal light permitting the turn. This practice has resulted in considerable interference to railway operation. In Schenectady buses are permitted to use the space between the platforms, but other vehicles are not allowed to do so. In a majority of cities from which information was secured in this survey general vehicular traffic is not allowed to pass inside the platforms. Opinion of operating officials strongly supports this regulation.





A 40-ton locomotive built by the Interstate Public Service Company from discarded material of two old bridges

## Locomotives Constructed Out of Bridge Material

BY C. M. BANGE

Master Mechanic Interstate Public Service Company,  
Scottsburg, Ind.

WHEN two large bridges were replaced in southern Indiana considerable steel in good condition was available. Some of this was used by the Interstate Public Service Company in the construction of a high-speed 40-ton locomotive in the Scottsburg shop. The locomotive will be used to haul freight between Indianapolis, Ind., and Louisville, Ky.

Working drawings were first prepared and the work laid out under the direction of the master mechanic. Credit for the splendid construction, however, belongs to the men in the shop.

The engine is 35 ft. long over bumpers, the central cab being 21 ft. in length. Truck centers are 18 ft. and the total height from rail to trolley base is 13 ft. 2 in. The two trucks are equipped with 34-in. rolled steel wheels.

Steel is used throughout in the construction of the cab except the floor and inside sheathing. The roof is steel, except for a wood platform to protect the crew when working on a live trolley. The window and door casings are made of No. 12-gage steel bent to the proper



At left—Motorman's position on one of the Interstate locomotives. At right—Plates removed from the control cabinet show mounting of the control equipment in the Interstate 40-ton locomotive

angle and then welded at the joints and riveted to form a watertight job.

All equipment is carried above the floor line except the air compressor and brake cylinder. Reservoir tanks and sand supply are carried on the open platforms. Heavy iron railings guard the platform ends.

Propulsion equipment consists of four Westinghouse 303-A motors, 115 hp. each, geared 16:61. Control equipment is a modification of the General Electric type M, built from material on hand. Two type C6-K ten-point controllers are used, mounted in each motor-man's position. All wiring is in metal conduit. Type MS-14 switches are used for control circuits, lighting and air compressors.

Westinghouse type 14-EL straight and automatic air brakes are used with a provision for using straight air on the locomotive alone.

The locomotive has a free running speed of 45 m.p.h. when running light and will haul eight to twelve loaded cars at 22 to 28 m.p.h. The cab arrangement allows full visibility in all directions. With the compressor mounted below the floor the noise is eliminated and comfortable quarters for the train crew are thus provided.

### P. R. T. Bus Is Featured at the Philadelphia Home-Building Show

EACH year a home-building show is held in Philadelphia. Each year the Philadelphia Rapid Transit Company stages a comprehensive exhibit at this affair to stress the fact that adequate public transportation is indispensable to the development of a community of homes. During the show this year, which was held in the First Regiment Armory, Feb. 7-12, it was again decided to use one of the company's de luxe gas-electric parlor car type buses for the central element in the exhibit. While in the opinion of the company these units are not the type usually employed to serve newly developed residential sections, they nevertheless have a

very beautiful appearance and were well adapted for a public exhibit, the comfort of the seats making them a popular resting spot for the visiting public. To encourage visitors to enter the bus and gain an impression of its roomy and comfortable interior arrangement the scheme was hit on of placing a transparent screen on the front windshield and then throwing moving pictures upon it from a machine placed directly in front of the bus.

Several reels of pictures, filmed by the P. R. T., were used, one of these gripping dramas being entitled "What the Motorman Sees," while another took the spectators on a trip through "Industrial and Historic Philadelphia." The former proved to be the most popular, particularly with the younger visitors, who swayed from side to side and squealed excitedly as the car in which "our hero" was stationed bore down upon careless automobilists and pedestrians. The films were run at frequent intervals throughout the day and evening and the S. R. O. sign had to be hung out at each performance.

Representatives of the street car, bus and Yellow Cab divisions of the company were on hand in uniform to hand out literature to the public and to answer any questions which might be asked. There was also an ex-service man on hand in his army uniform to answer questions concerning the service which the Mitten Men and Management Bank and Trust Company has been rendering to veterans in extending loans on their adjusted service certificates. An added touch of reality was given to the exhibit by the array of baggage placed in the rack on the roof.

Progressive traffic control signals showing red and green lights simultaneously at alternate intersections were put in operation April 5 on Chestnut Street, Philadelphia. They replace the hand semaphores which have been in use recently. Some time ago the same electric signals were in use with a system of synchronized control. Comparisons will be made of traffic flow under the different systems.



One of the highlights of the recent Philadelphia Home-Building Show was the gas-electric bus exhibited by P. R. T.

# Meeting an Emergency

## in Nashville

The story of the methods used by the Nashville Railway & Light Company to maintain service during the floods of last December and January



Scene on the North First Street line. The water at this point was about 3½ ft. deep. In oval—Emergency transportation was given by the railway's line trucks and other vehicles, in addition to which other vehicles were rented

**C**RISES in the operation of transportation lines are relatively rare. Some of the unusual events can be planned for in advance, but when the forces of Nature combine to attack a whole city, as they did Nashville, Tenn., during the flood of the last holiday season, it takes heroic methods to combat them. While it is to be hoped that other transportation companies will not have the opportunity of adopting methods similar to those used by the Nashville Railway & Light Company in keeping up service, the record of the preparations made and the results obtained are of great interest.

A series of terrific rains, reaching a climax during Christmas week, was experienced in the Cumberland Valley and the vicinity of Nashville. The first part of Christmas week there was a 5.5-in. rainfall, but although river traffic was tied up, trains were running late and warehouses were being vacated, it was still hardly more than a high-water story to the newspapers. On Christmas Eve the gage showed a depth of 43 ft., but even then it was expected that the river would recede within 24 hours.

Radio station WLAC went on the air Christmas Day with the first news that people were fleeing in all directions and indicating the seriousness of the situation. The rain lasted until Dec. 23, with a total precipitation of 11.38 in. The water continued to rise until Dec. 29, reaching a height of 56.2 ft. and shattering the previous

record of 55.2 ft., registered in 1882. Until Sunday, Jan. 2, the Cumberland clung to its high stage, then fell to 55 ft. the next day, thereafter falling much more rapidly until it was back to something like normal.

The river at one point was more than 3 miles wide. Practically all towns to the east of Nashville became isolated and mail had to be carried to them by airplane. All main highway cities to the east were cut off. When it approached its highest point the flood began to cripple street railway and bus service, with the ultimate result that thirteen of the Nashville Railway & Light Company's lines were under water. It is a matter of record that lines of the company were kept open despite the greatest handicap they ever operated under. This was accomplished only by the greatest effort and sacrifice of the employees. The majority of the men worked day and night, sticking to their cars and seeing that they did not shut down no matter what came. As a typical example, one man who was so zealous in his work actually was on his feet 48 consecutive hours without a wink of sleep.

### NEW BUSES PLAYED HEROIC PART

It just so happened that when the flood reached the perilous stage seven new Yellow motor coaches purchased by the company had arrived from Chicago. To start with, the delivery of these coaches was held up about eight hours by floodwaters when 50 miles out of



This scene on the Jo Johnson line was typical of many backwashes throughout the city, where the cars continued to run



This shows the condition of the company's storeroom at the height of the flood. The men in the rowboat are salvaging poles and materials. At the extreme left a crane is attempting to raise a marooned street car



Another deep point was on the Shelby Street car line, where the water covered the tracks about 8 ft.

Nashville. These buses played a heroic part in the emergency, arriving just in time to go into service in order to transfer the very first water-marooned passengers around the flood area to waiting street cars.

In many instances the buses plowed through water right up to the motor. This service was performed under these strenuous conditions without any trouble and without any of the buses having either operating or mechanical difficulties of any kind, even though at times water ran right into the coaches themselves.

The flood situation became so bad that even these new motor coaches were unable to cope with the passenger transfer situation. The company pressed into service its overhead line trucks and every available motor vehicle. In addition outside equipment was rented to facilitate to the utmost the uninterrupted movement of passengers. At some points the car tracks were covered by 12 to 15 ft. of water. The following figures show the depth of water over points on the various routes:

Jo Johnson line	16.48 ft.
Lebanon line	12.31 ft.
First Avenue South line	10.2 ft.
North First Street line	10.82 ft.
Fourth Avenue South line	5.14 ft.
Main Street	5.33 ft.
North Second Street	4.79 ft.
Fourth Avenue North	4.48 ft.
Cedar Street	3.67 ft.
Fatherland Street	1.53 ft.
Woodland Street	.2 in.
Sixth Avenue South	.67 in.
Third Avenue South	.62 in.

Indicative of this condition the illustrations show the great depth of the water. In one will be noticed the car stop sign on the overhead guy line, which is just above the water line, indicating a depth of approximately 15 ft.

The company advertised in the local newspapers to keep its patrons informed from day to day as to the situation and to advise what steps had been taken to furnish them with transportation. One of these advertisements is reproduced herewith.

East Nashville is a distinct part of the town and there are three passenger bridges which connect it

## NOTICE TO STREET CAR PATRONS

### SOUTH NASHVILLE

Outbound passengers on the Fairfield and Radnor lines will ride cars bearing those names, but which will be routed on Sixth avenue, south, to Sixth and Ash. At this point transfers will be given, acceptable at Ash and Third avenue, for the remainder of the Radnor or Fairfield trip.

Inbound Radnor and Fairfield passengers will transfer at Third and Ash to cars waiting at Sixth and Ash, for the remainder of the trip to town.

### EAST NASHVILLE

Outbound passengers on the Shelby line will ride either Porter Road or Inglewood car to Third and Woodland, at which point transfers will be given, acceptable at Third and Fatherland on Shelby cars, which will complete the outbound trip.

Inbound Shelby passengers will be given transfers at Third and Fatherland, acceptable at Third and Woodland, for the remainder of the inbound trip.

### NORTH NASHVILLE

All passengers on inbound St. Camille and Buena Vista street cars will transfer at Patrick Avenue and Jefferson street to Jefferson street cars. By street car and motor bus, passengers will be transferred from this point to Twenty-second avenue and Cedar, where inbound West Nashville cars will take them, by way of Church street, to the uptown business district and the Transfer Station. Patrons of the Jefferson street line will be transferred at Sixteenth avenue over to Jo Johnson street cars and on to Twenty-second avenue and Cedar, where West Nashville cars will take them to the uptown business district and the Transfer Station.

Patrons of the Jo Johnson line wishing to reach the business district will ride the Jo Johnson car to Twenty-second and Cedar, transferring there to West Nashville cars for the trip to the business district and the Transfer Station.

Patrons of the Cedar street line wishing to reach the business district will ride the Cedar street car to Twenty-second and Cedar, where they will transfer to West Nashville cars, going to the business district and the Transfer Station.

Patrons returning home on all the above lines will ride outbound West Nashville street cars to Twenty-second and Cedar, where they will be transferred to their respective street car lines.

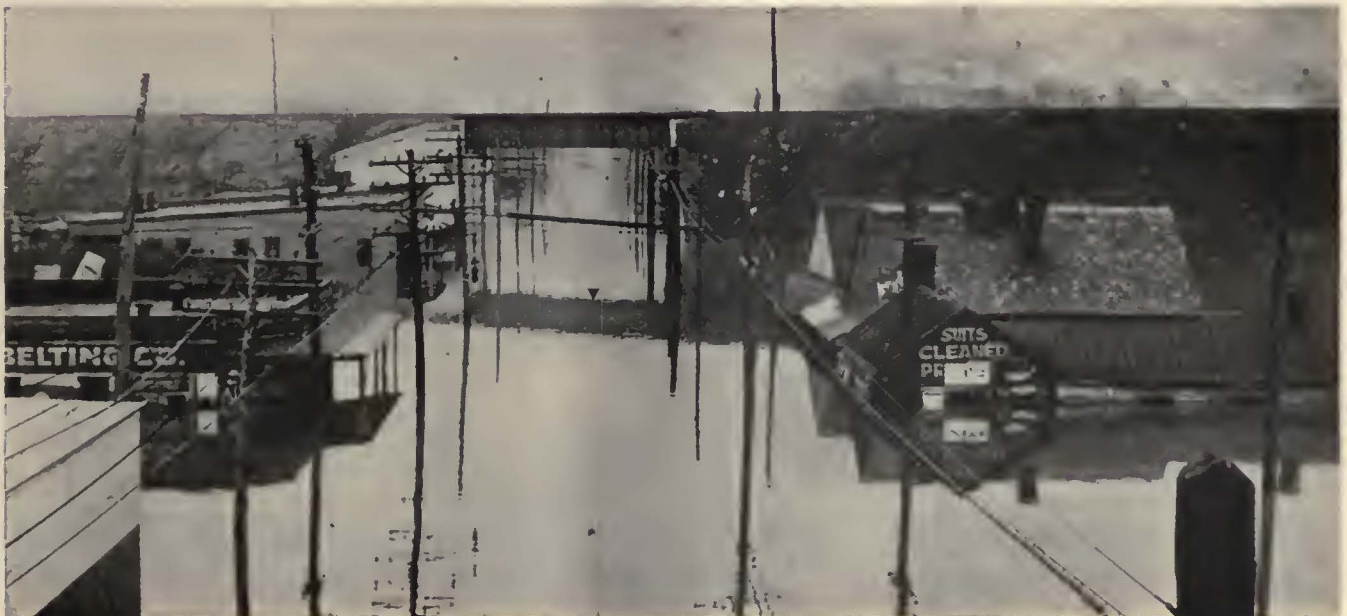
### THESE CHANGES IN SERVICE ARE DUE TO FLOOD CONDITIONS

The system of transferring on all other lines in the affected area remains unchanged.

## Nashville Railway & Light Company

Advertisements like this one in the Nashville *Tennessean* kept the public informed of the steps taken by the company to give emergency service

with the remainder of the city. Early in the flood, two of these three bridges were closed to traffic on account of the high water and the danger that they might collapse, the water having risen over the roadways on them. This left only one bridge open between the main part of the city and East Nashville, with the water continually rising. At this time the water height had broken a hundred-year record. The remaining bridge was the Woodland bridge, a steel structure,



On the North Nashville car line the water was between 5 and 6 ft. deep

### What Public Officials Thought of the Railway's Flood Service

CITY OF NASHVILLE

NASHVILLE, TENN., Jan. 21, 1927.

Mr. J. P. W. BROWN, Vice-president  
Nashville Railway & Light Company,  
Nashville, Tenn.

MY DEAR MR. BROWN: I want to commend publicly your company for the outstanding service it rendered a distressed city during the worst flood in Nashville's history.

I am sure that the public at large sincerely appreciates the service rendered by your company in such an extreme emergency.

With best wishes for you and your company, I am,

Sincerely yours,

HILARY E. HOWSE,  
Mayor.

CHAMBER OF COMMERCE

NASHVILLE, TENN., Jan. 21, 1927.

Mr. J. P. W. BROWN, Vice-president  
Nashville Railway & Light Company,  
Nashville, Tenn.

MY DEAR MR. BROWN: As president of the Nashville Chamber of Commerce, I want to take this opportunity to recognize and to commend the Nashville Railway & Light Company for its splendid service during the recent flood.

I have heard on every hand the most laudatory comment concerning the tireless efforts and splendid accomplishments of your railway, power and lighting departments in the face of a tremendous handicap. Your company not only met the emergency by transferring passengers in buses around the flood area, and by organizing your other departments for flood relief, but it also made a generous contribution to the fund for alleviating distress.

In all of this work, I am sure that you have strengthened your friendship with the people of Nashville, and in this expression I am sure that I reflect the appreciation of all Nashville.

Sincerely yours,

CHAS. M. MCCABE,  
President Chamber of Commerce.

across which ran every street car line carrying passengers to East and Northeast Nashville. At this point centered the efforts of the railway. When the water started to climb on the east approach of the bridge it was realized that it would be only a matter of a few hours until East Nashville would be completely shut off from the rest of the city.

#### TRESTLE BUILT READY FOR USE

A hurried conference was held called by J. P. W. Brown, vice-president, with the department heads and it was decided to keep the East Nashville lines open at any cost. The shop forces immediately went to work to build a railroad trestle, the material being cut and placed in the carhouse. The trestle was built and the rails actually placed on it in the shop and held there, so that it was all ready to rush to the scene the moment it became necessary to operate the cars through water. The plan was to erect this trestle over the existing tracks and run the trolley cars over it. However, as it was completed the flood started to recede and its use became unnecessary.

The property damage to the railway company's lines was not very great, but the company suffered a severe loss in revenue and was put to great expense in running the transfer service on the thirteen lines on which railway service had to be discontinued. The flood receded rapidly after passing the crest. Traffic was resumed by Friday, Jan. 7, on all lines.

Many letters were received by the company commending it on its meritorious service during these flood conditions. Outstanding among these were a letter from Mayor Hilary E. Howse and another from Charles M. McCabe, president of the Nashville Chamber of Commerce. Both of these letters are reproduced. They expressed the thanks of the residents of the city for the untiring efforts and the splendid accomplishments of the railway during the flood, although the company was operating in the face of tremendous handicaps.

In addition to the loss of revenue and the enormous expense the company was put to, it made a very generous contribution to the flood relief fund, for which subscriptions were solicited in the city, all of which received very favorable publicity.



The deepest water was on the Greenwood extension. A stop sign on the span wire may be seen in the distance just above the surface, indicating a depth of about 15 ft.



By the use of aluminum alloys for car framing and trucks this 51-ft. Cleveland car was made to weigh 30,300 lb., as compared with 43,200 lb. for the company's standard car of similar dimensions

# Cleveland Aluminum Car

## Proving Successful

Experimental car built by Cleveland Railway to determine possibilities of using aluminum alloys in car construction develops no weakness after more than four months operation

**D**URING the annual convention of the American Electric Railway Association at Cleveland last fall keen interest was shown by many delegates in the double-truck "aluminum" car for city service built by the Cleveland Railway. Since then many inquiries have been received by the company's officials from railway men in this country and abroad as to how this sample car has stood up in service. Due to the short time in which the car was built and the extent to which aluminum alloys were used for parts subjected to strains and shocks, even those who conceived the idea of building such a car expected that some weaknesses in the structure might develop after a period of operation under the severe service and loading conditions encountered in Cleveland. But more than four months of operation has failed to develop a single serious evidence of structural weakness.

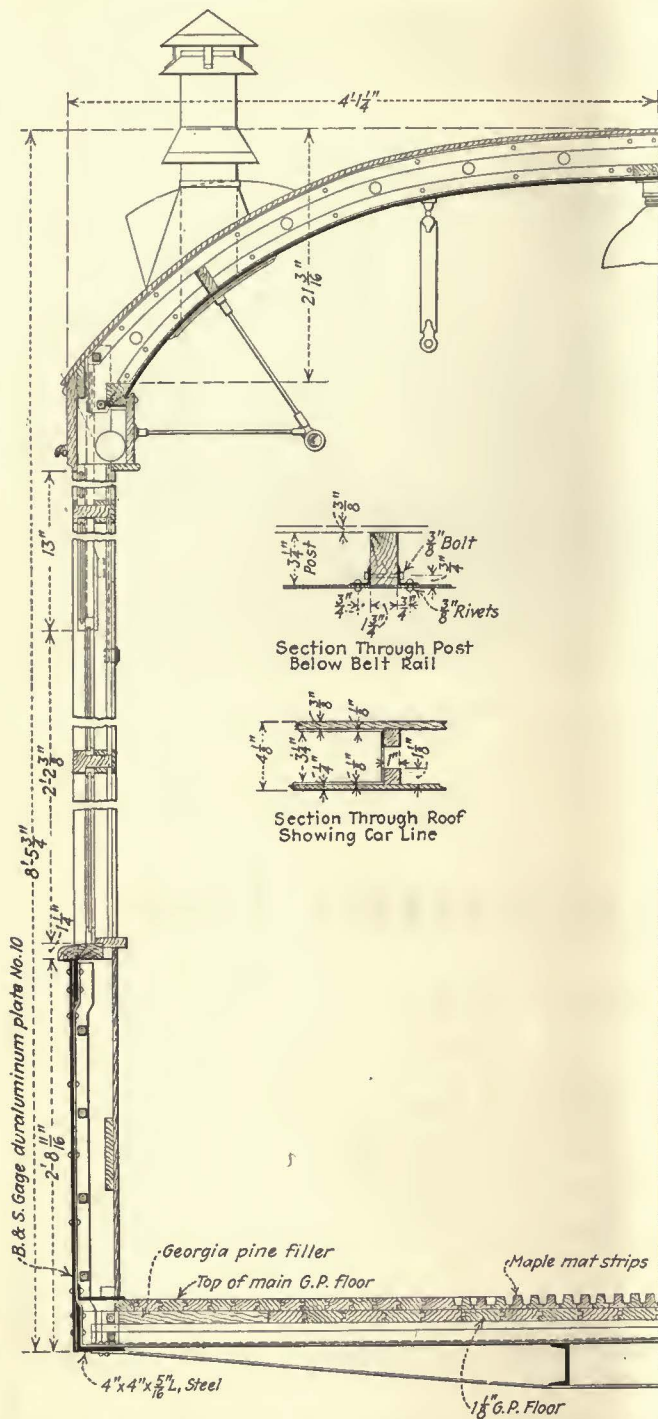
The material used is duralumin, an alloy of aluminum with various combinations of magnesium, manganese, copper and silicon, to give the desired physical characteristics after heat treatment. This material, which is used extensively in the construction of aircraft, is obtained in form available for forgings, structural shapes,

tubing and castings. It is claimed for duralumin that after it has been tempered the strength approaches that of mild steel.

### USED STANDARD CAR DRAWINGS

When J. H. Alexander, president of the Cleveland Railway, decided to go ahead with the construction of an experimental aluminum car for exhibit at the convention, time did not permit the structure to be specially designed for the new material. Consequently, the standard Cleveland drawings for a steel car of what is known as the 1300 type were followed, the duralumin being substituted for steel with practically no change in section sizes. The only parts in which the size was increased in aluminum alloys over steel were the body side sheets, the truck side frames and the body bolsters. The car was built in the Harvard shops of the railway company under the direction of Terence Scullen, master mechanic.

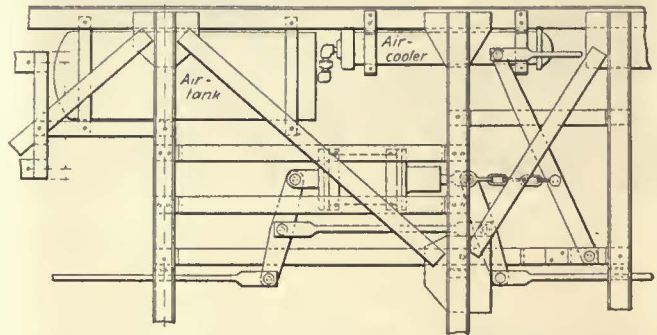
Except for the windows, doors, side sill angles, wheels, axles, springs, gears, journal boxes, air tanks, resistor grids, trolley base, motor magnet frames and the main body of the air compressor, the car structure and equip-



Vertical section through side framing of "aluminum" car. Side posts are wood, fastened to the duralumin side sheet by 1 1/4-in. duralumin angles riveted to the sheet and bolted through the post



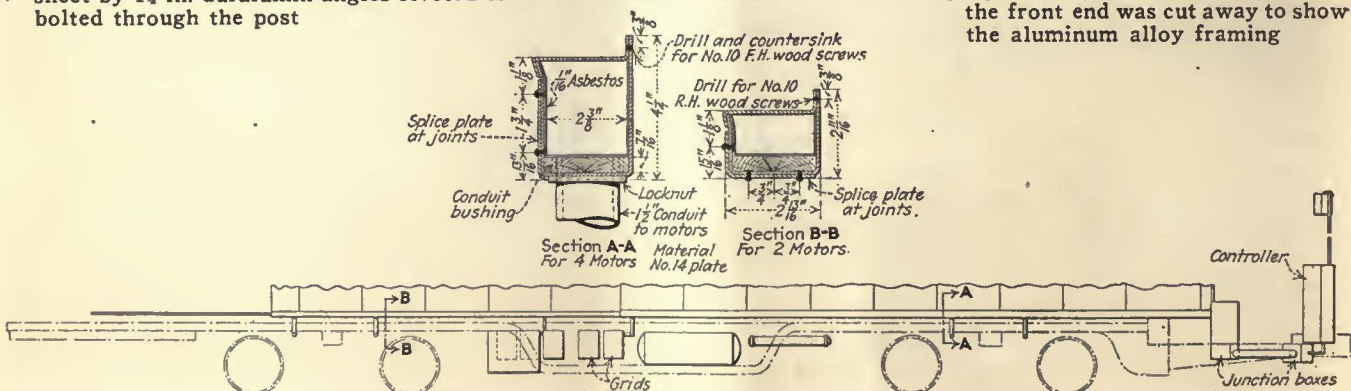
View looking up under car, showing aluminum alloy framing members, apparatus hangers and door mechanism



Foundation brake rigging layout of Cleveland car. Brake cylinder, levers and pull rods are aluminum alloy

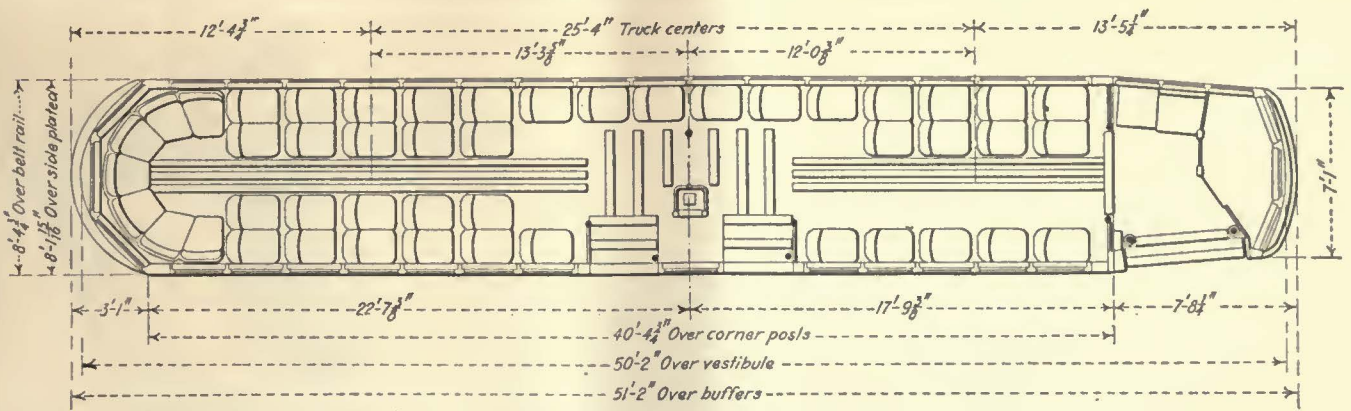


Interior view of experimental "aluminum" car as exhibited during Cleveland convention, showing twin seat arrangement. For exhibit purposes a portion of the floor at the front end was cut away to show the aluminum alloy framing



Special cable conduit arrangement used in Cleveland car. This is run above the body floor with outlets for motors and resistors as shown in diagram

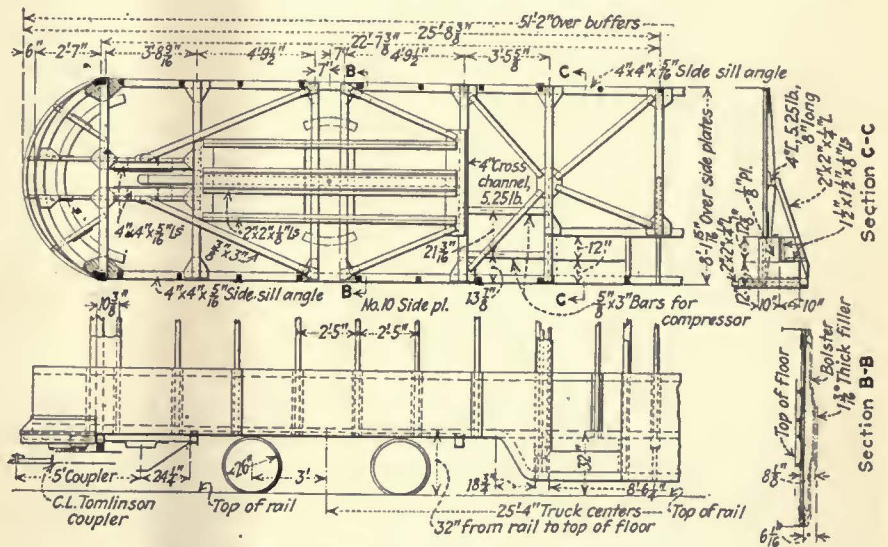




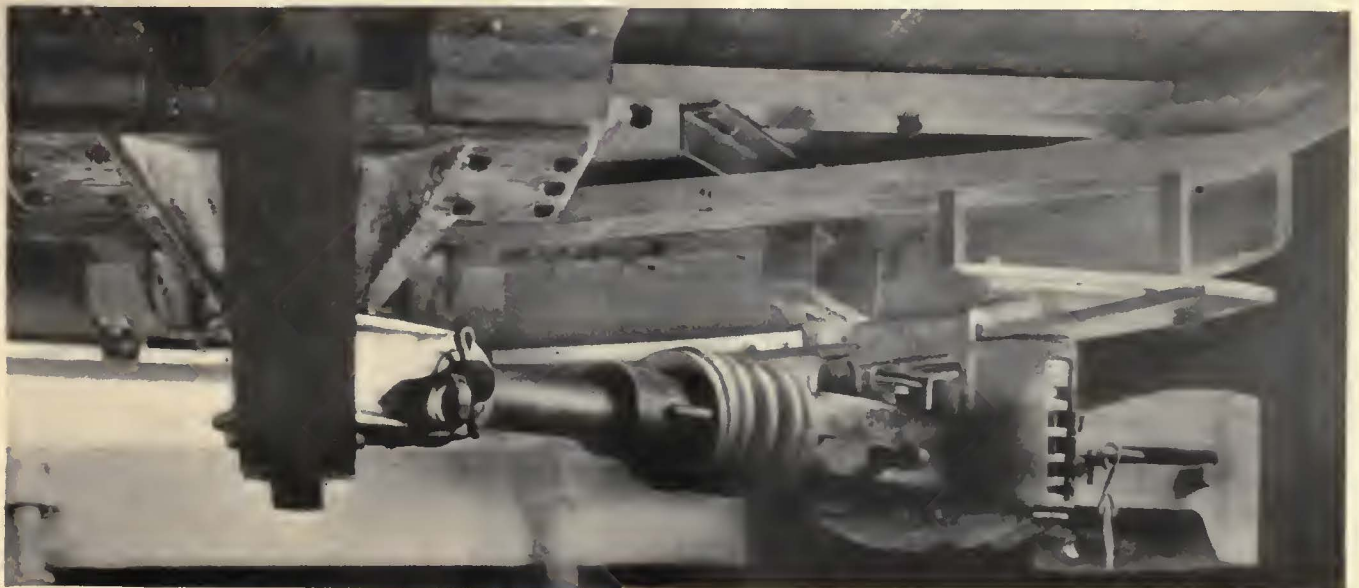
Comfortable individual seats in the Cleveland "aluminum" car are upholstered in rattan. The car is of the Peter Witt type, front entrance and center exit

ment are built almost entirely of duralumin. The material was furnished by the Aluminum Company of America in standard alloys of various compositions and physical characteristics depending upon the nature of the application. Rolled plates and extruded structural sections are made of what is known as 17-S alloy tempered to an ultimate strength of 55,000 to 60,000 lb. per square inch, yield point 30,000 to 40,000, elongation 18 per cent to 20 per cent, and modulus of elasticity 10,000,000. Standard commercial shapes in duralumin are made by the process of extrusion instead of rolling. In this process the alloy is heated until it has the consistency of jelly, and while in that condition is forced through dies into the desired shapes. The material used in forgings is called 15-S alloy and has practically the same physical characteristics as 17-S alloy except that the elongation is 16 per cent to 18 per cent instead of 18 per cent to 20 per cent. Duralumin tubing is made of 51-S alloy with an ultimate strength of 40,000 to 45,000 lb. per square inch, yield point 30,000 to 40,000 and elongation 10 per cent to 12 per cent. What is known

as 195 alloy is used for castings. The normal characteristics of this material are: Ultimate strength, 28,000 to 30,000 lb. per square inch, yield point 15,000, elongation 6 per cent, and Brinell hardness 50. By varying the treatment of 195 alloy it is claimed that the ultimate strength can be increased to 36,000, the



Framing diagram of Cleveland car. Duralumin is used throughout with exception of bumper and side sill angles



Coupler, anchorage casting and framing at rear end of Cleveland car are all made of aluminum alloys with the exception of springs and coupler hook

COMPARATIVE DATA ON THE STEEL AND ALUMINUM CARS

General	Steel	Aluminum
	Class of car.....	Front-entrance, Center-exit
Seating capacity.....	49	49
Standing capacity.....	91	91
Total load.....	140	140
Entrance arrangement.....	Front	Front
Exit arrangement.....	Center	Center
Car builder.....	Cleveland Railway	Cleveland Railway
<b>Electrical Equipment</b>		
Motors per car (1 nr).....	Westinghouse 340	Westinghouse 510-E
Horsepower per motor.....	40	35
Gear ratio.....	15:57	13:69
Control.....	K-35-G	K-35-KK
<b>Truck and Air Brake</b>		
Air brake.....	SME straight air	SME straight air
Compressor.....	Westinghouse D11-20	Westinghouse D11-20
Truck, type.....	Brill 68-E-1	Brill 68-E-1
<b>Dimensions</b>		
Length over bumpers.....	51 ft. 2 in.	51 ft. 2 in.
Length between truck centers.....	25 ft. 4 in.	25 ft. 4 in.
Truck wheelbase.....	6 ft. 0 in.	6 ft. 0 in.
Height from rail to top of roof.....	10 ft. 9/16 in.	10 ft. 9/16 in.
Height from underside of sills to top of roof.....	8 ft. 5 1/2 in.	8 ft. 5 1/2 in.
Width of car body over side plates.....	8 ft. 1 1/8 in.	8 ft. 1 1/8 in.
Axle bearing diameter.....	4 1/2 in.	4 1/2 in.
Wheel diameter.....	26 in.	26 in.
<b>Weights</b>		
Car body without trucks or equipment.....	18,354 lb.	13,851 lb.
Trucks per pair without gears.....	12,096 lb.	8,220 lb.
Motor equipment.....	9,242 lb.	5,720 lb.
Control equipment.....	1,298 lb.	827 lb.
Air brake equipment and piping.....	1,764 lb.	1,301 lb.
Heater duct and heater.....	446 lb.	381 lb.
Total weight without load.....	43,200 lb.	30,300 lb.
Saving by use of aluminum alloys.....	12,900 lb.	



Frames of the Brill 68-E-1 trucks are forged duralumin. Likewise brake rigging, bolster, transoms and spring plank are made of the lightweight material

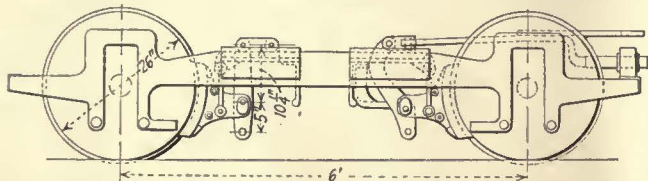
The car, which is shown in accompanying illustrations, is 51 ft. 2 in. long over the bumpers. Truck centers are 25 ft. 4 in. Height is 10 ft. 9 1/16 in. above rail and the car is 8 ft. 1 1/8 in. wide over side plates. It is of the front-entrance center-exit type with a seating capacity of 49 and an estimated standing capacity of 140. Four Westinghouse 510-E, 35-hp. motors are used, with K-35-KK control. A Westinghouse DH-20 air compressor is provided. The car is glazed throughout with plate glass 1/2 in. thick.

Since the "aluminum" car was built entirely on an experimental basis, no comparative cost figures are available. In general, the aluminum alloys weigh about one-third as much as steel and the cost per pound in structural form is roughly six times that of steel. For a given structure, then, the cost in duralumin would be about double the material cost in steel. Against this should be credited the scrap value of the aluminum alloy.

Based upon its experiences with the sample car, the Cleveland management has found no serious obstacle to the general application of duralumin to car construction. The saving in weight that is made possible by the use of the lighter material is strikingly shown in the accompanying tabulation, which gives the principal dimensions, specifications, and a comparison of weights for a standard 1300 type car built of steel and the "aluminum" car made from the same drawings.

yield point to 27,000 and the Brinell hardness to 80. In this condition, however, there is no elongation and the material is very brittle.

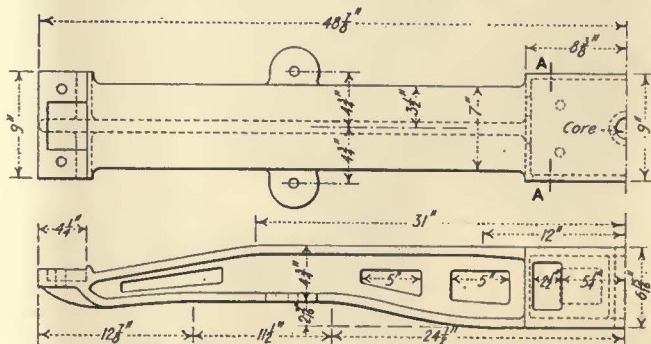
On the body the side sill angles, rear bumper, the left-hand support of the front platform and a few minor parts of the structure are of steel. The duralumin side sheets are 0.125 in. thick in place of the 0.102-in. steel



Elevation drawing of Brill 68-E-1 truck. Side frames are made of forged duralumin

sheets used on the standard cars. The body bolsters are cast of 195 alloy, having a section approximately 20 per cent greater than the steel castings for which they were substituted. The trucks are Brill type 68-E-1 with forged side frames. Here again duralumin was substituted, but the side frame section was made somewhat thicker than normal to allow a greater factor of safety. The truck bolsters are likewise made of forged duralumin. Although the motor magnet frames are necessarily of steel, the motor axle caps, armature bearing housings at both ends and the gear cases are aluminum. All heater ducts, piping, brake levers and pull rods, apparatus hangers and the brake cylinder are aluminum. Although it was not possible to make the entire compressor frame of duralumin, this material was used for the end castings of the frame. Even such parts as the Tomlinson couplers and anchorage castings are aluminum alloy in their entirety with the exception of coupler hooks and springs.

The rivets used throughout the body and truck are steel. It was not thought practical within the limited time available in building the car to attempt to develop a successful technique for hot driving and tempering aluminum alloy rivets in shops which were unfamiliar with their use.



Cast aluminum body bolster made of 195 alloy

The section was increased about 20 per cent over steel but was trimmed in machining so that only a few pounds of extra aluminum was added.

# Maintenance Notes

## Bearings Heated Over Slow Fire Before Babbitting

**I**F SUCCESSFUL babbitting of undersized journal and armature bearings is to be done, it is essential, in the opinion of J. W. Gordon, master mechanic Atlantic City & Shore Railroad, Atlantic City, N. J., thoroughly to remove all oil before beginning the process. This is accomplished in the shop of this railway by heating the brasses for one hour over a blacksmith's slow fire. Oil which has worked into the bearings is boiled out by this means. Only genuine babbitt metal is used. Babbitt that has been melted off armature brasses is used on journal brasses and axle bearings. For the armature bearings, however, only new metal is used. Due to the care in preparation of bearings, failures are said to have become practically a thing of the past on this road.

## Maintenance Cheaper with Built-Up Special Trackwork

**E**XTENSIVE use is made of built-up special trackwork by the Market Street Railway of San Francisco for both angle and 90-deg. crossings. This type of special work is considered economical to maintain because it allows for extensive repairs by means of electric welding. The built-up type of crossing is assembled of 9-in., 106-lb. grooved girder rail. One set of rails is carried through the crossing, the head being cut out to allow for the flange-way of the crossing rail. The other rails are in short sections fastened to the through rails by angle plates  $\frac{7}{8}$  in. thick bolted directly to the short cross rails and through a  $1\frac{1}{2}$ -in. filler block to the through rails. The entire assembly is mounted on a  $\frac{3}{4}$ -in. steel plate 33 in. square. It is anchored by clips held in place with  $\frac{3}{4}$ -in. key head bolts. After the crossing is made up all bolts are spot welded to prevent loosening. As this is a flange-bearing crossing, two steel wheel riders are riveted into the grooves of the rails at the crossing. With this type of construction it is possible to build up by electric



Built-up crossing which has been maintained in satisfactory operating condition by electric welding on the Market Street Railway

welding those portions of the short lengths of rail which have a tendency to wear.

Repairs to this type of crossing are

*A "hand to mouth" sustenance, applied to Maintenance, is downright extravagance.*

made very easily. For instance, in the case of a damaged short section between joints in the crossing, a plug is made up of a section of rail head mounted on a joint plate. The plate is bolted to the web of the rail and the head welded into the cut-out section of the original rail head. It is then built up by electric welding and made a continuous portion of the original rail. Complete rebuilding of an entire double-track crossing costs the company approximately \$500.

## Shoe Heads Ground Quickly

**R**EALIZING that there was room for improvement in the method of grinding shoe heads, the Los Angeles Railway, Los Angeles, Cal., has constructed in its machine shop a very much improved machine for doing this work. One man with the new machine can grind from 150 to 180 shoe heads per day. This is 50 per cent more than by the previous



Grinding a shoe head by means of the new machine

method, which used a rocker arm attached to a standard grinding machine. The grinding operation is part of the work done in reclaiming old shoe heads. Worn portions, particularly the tips of old shoe heads, are built up by welding and are then brought to the desired surface by grinding.

The new machine consists of a cast-iron bed 30 in. high, 22 in. wide and 38 in. long. A coarse alundum grinding wheel, 14 in. diameter by 3 in. thick, is mounted at the top of the bed. The wheel is driven by a vertical 5-hp., 1,500-r.p.m. motor which is installed underneath the bedplate.

For grinding the shoe head is held on a radius arm which rotates about a vertical post. This post is 2½ in. in diameter and stands 18 in. above the bed. A feature of the new machine is the simple and quick adjustment so that shoes can be placed in

chine. This prevents the radius arm from swinging too far and endangering the workmen.

With the old method of grinding the shoe head was held in position

by nuts. After one point had been ground down the nuts had to be loosened and the shoe head changed to another point. It was then tightened up again for grinding.

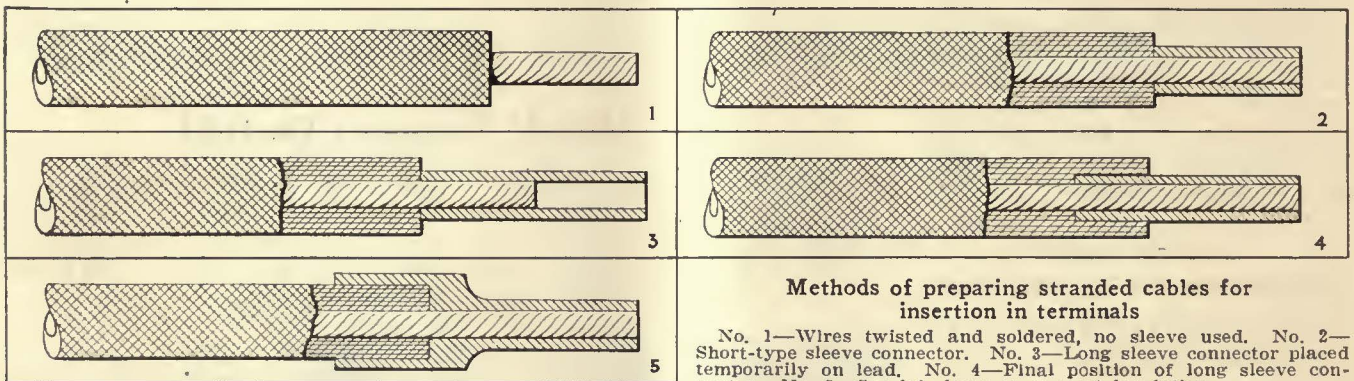
## Sleeves for Cable Leads

BY J. S. DEAN

Renewal Parts Engineer Westinghouse Electric & Manufacturing Company

**C**ONTINUALLY troubles occur in railway motors with the wiring around the frames and with the cable leads outside, due to breaking of the copper wires at the point where the insulation is cut away from the cable. It is almost impossible to remove this insulation without nicking or cutting several of the copper wires. In a comparatively short time these nicks cause the wire conductor to break at this point. Some of the schemes in common use

forced underneath the insulation. The sleeve is first placed temporarily over the copper strands and then is pushed in place under the rubber insulation of the cable. This is done while the sleeve is being heated and soldered to the copper wires of the cable, which in turn softens the insulation. This type of sleeve reinforces the copper wires at the end of the insulation and transfers the strains on these wires back under the insulation on the cable, so min-



Methods of preparing stranded cables for insertion in terminals

No. 1—Wires twisted and soldered, no sleeve used. No. 2—Short-type sleeve connector. No. 3—Long sleeve connector placed temporarily on lead. No. 4—Final position of long sleeve connector. No. 5—Special sleeve to support insulation.

position and removed quickly. A pin placed through the shoe head fastens it to the radius arm. This pin has a tapered key on the top side for quick adjustment. Adjustments are also made by two screws of four-pitch on either side of the pin holding the shoe head. This adjustment is used for grinding the ends so the grinding can be done either vertically or horizontally.

The radius arm is 20½ in. long, kept constant regardless of the size of the grinding wheel. Adjustment for bringing the shoe head to the grinding wheel is made through a pitch screw that forces the supporting base for the upright post either forward or backward, in guides along the bedplate. In the accompanying illustration this is shown at the right-hand end of the machine. In the grinding work both automatic and hand feed are provided.

To provide against possible accidents the radius arm has a stop pin which comes in contact with a stop plate fastened to the bed of the ma-

at present and a few new ones suggested to remedy this condition are given in the accompanying illustration.

The most common method used to finish the ends of the cable leads is shown at the top. Here the strands of wire are soldered together to make a solid conductor. This provides a solid seat for the ends of the screws in the terminal and makes a better joint than if the strands of wire are left unsoldered.

The second method shows the end of the cable with a short sleeve slipped over the strands of copper and soldered in place. This is an improvement over the preceding, as it provides a better contact in the terminal and thus is less liable to heat up in service.

The next two illustrations show how a long copper sleeve can be

imizing the breakage of wires at this point.

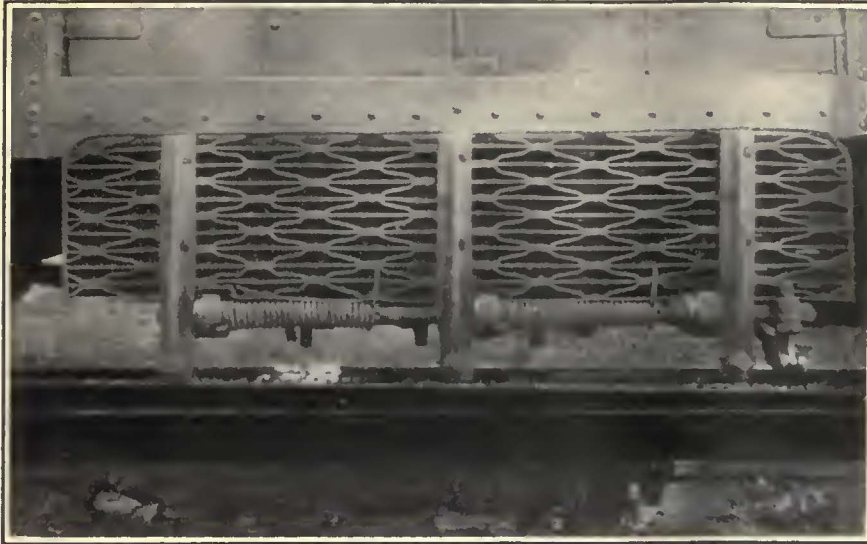
The bottom illustration shows a special type of combined terminal and sleeve which supports the insulation on the cable. This type of terminal strengthens the copper wires of the cable where they may have been damaged by cutting off the insulation. It also transfers the strain on the wires back some distance under the insulation of the cable, so as to increase the life of the connection.

## Hot Water Used for Truck Cleaning

**W**ATER at 300 lb. pressure and at 140 deg. temperature is now used by the Market Street Railway, San Francisco, Cal., for cleaning dirty trucks. This is taken from a new high-pressure water system recently installed in the shops and makes the cleaning of dirty trucks a matter of only a few minutes.

*Investigate your troubles, then  
Invest-in-a-gate to stop them.*

### Metal Car Steps Reduce Maintenance



Standard metal step folded up

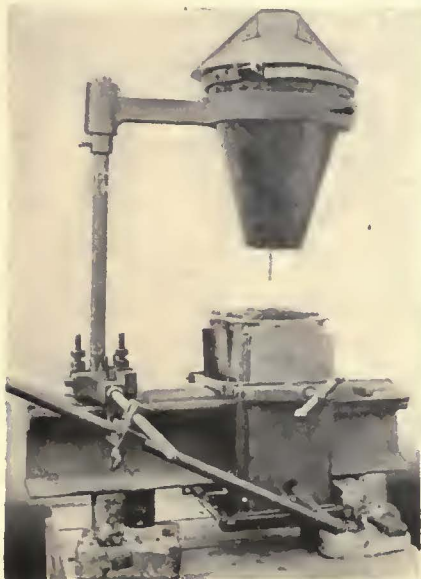
ONLY a few cars of the Wilkes-Barre & Hazleton Railway, Hazleton, Pa., are operating with wooden steps, as a metal step made by the Irving Iron Works has been adopted which is sanitary, self-cleaning, fireproof, non-slipping and

presents a very neat appearance. Wooden step maintenance costs are usually very high due to breakage, splitting and decay. It is claimed that since the metal steps have been installed this item of maintenance costs has practically ceased.

## New Equipment Available

### Improved Thermit Nozzle Holder

COMBINATION of a crucible stand, base and nozzle holder has been made recently for thermit rail welding. This adaptation simply has used the pedestal type holder



Crucible and preheater holder clamped to rail

with the heavy base replaced with a simple clamping device which is clamped on the rigid crucible stand.

This new method of holding the preheater nozzle is an improvement over the pedestal type in which the weight of the base held the nozzle in place against an occasional jar caused by a workman striking or stepping upon the hose leading from the preheater.

### Shoe Brake for Crane and Hoist Motors

WITH the purpose of meeting the demand for a shoe brake for crane and hoist motors with long life for the lining and permitting quick removal of motor armature with the brake wheel in place and without the necessity of taking the brake apart, the Electric Controller & Manufacturing Company, Cleveland, Ohio, has brought out the type WB brake. This brake has no levers or rods to pass over the top of the brake wheel. The brake shoe arms are caused to operate in opposite directions by means of a simple lever movement having the connecting links

within the base below the wheel. Steel castings machined to a high degree of accuracy and oversize bearing pins are used. The brake shoe linings are of asbestos interwoven with wire and molded to shape under heavy pressure. Linings are 1/2 in. thick on the smallest size brake and 3/4 in. thick on the largest size. This permits a large amount of wear before replacement is needed.

### Convenient Wrench Kit

CHROME-VANADIUM right-angled wrenches are a new style recently introduced by the Bonney Forge Tool Works, Allentown, Pa. These are of the double-end type, but vary from the conventional wrench in that the jaws are at right angles to the handle. The new No. 4 kit is a sample, consisting of three of the most popular sizes. The price of the complete kit is less than would be paid for the wrenches alone if bought singly.



Three wrenches in convenient case

The manufacturer guarantees that these wrenches are stronger than the bolt or nut which they fit and will strip the thread or break the bolt without damage to the wrench.

### Disinfectant for Cars

LEINOL pine is now being used by the Market Street Railway, San Francisco, Cal., to disinfect its cars daily. Leinol pine is manufactured by the John F. Leinen Sanitation Company, San Francisco, Cal., and has a pleasing pine odor. Its inoffensiveness makes it possible to apply it daily by means of a simple machine.

# American Association News

## American Executive

SEVERAL important committee reports were carefully studied and fully discussed by the American Electric Railway executive committee at a meeting held April 1 at association headquarters in New York. Progress was reported in carrying out the plans started under the leadership of President Sawyer and Managing Director Storrs for improving the association's service to the industry and keeping abreast of changing conditions and modern transportation requirements. Those in attendance at the meeting included the following: W. H. Sawyer, president; R. P. Stevens, J. P. Barnes, J. H. Hanna, L. S. Storrs, F. R. Coates, L. E. Lippitt, C. B. Proctor, Daniel Durie, Harry Reid, C. E. Morgan, E. P. Waller, B. A. Hegeman, Jr., G. A. Richardson, T. A. Kenney, M. B. Lambert, S. J. Cotsworth, C. R. Elliott, H. L. Brown, T. W. Casey, J. N. Shannahan, C. D. Emmons, W. R. Robertson, W. R. Power, A. E. Reynolds, R. B. Stearns, T. R. Langan, F. B. Bullock representing J. H. Alexander, H. V. Bozell, Paul E. Wilson, Edward Dana, Charles Gordon, J. W. Welsh, G. C. Hecker, J. W. Colton, Leslie Vickers, F. C. J. Dell and Labert St. Clair.

### CHANGES IN CONSTITUTION PROPOSED

With the object of making the association representative of all constructive factors in the development of transportation, the committee on revision of the constitution recommended that bus companies not directly affiliated with electric railways be made eligible for membership under definitely defined conditions. This broadening of membership requirements was recommended under the following conditions: "Company members shall consist of American companies operating any form of organized urban or interurban transportation system, or lessees or individual owners of such systems, or management or holding companies all of whose eligible subsidiary companies are company members of the association, or steam railroads having electrified sections or operating motorized equipment, and of companies, firms or individuals manufacturing or supplying materials or rendering service to such transportation companies.

"Before passing upon applications for membership of operating transportation companies, the executive committee shall cause to be published to the membership in the official publication of the association, or otherwise as the executive committee may direct, a list of such applicants under consideration together with the recommendation of the membership committee.

"Further, in the consideration of such applications as mentioned above the executive committee shall endeavor to secure in writing the advice of all operating member companies in the

immediate vicinity of the applicant. Further, one of the essentials to membership shall be that, in the opinion of the executive committee, the applicant shall be fully serving or able in fact and holding itself in readiness fully to serve the transportation needs of the territory in which the applicant is operating, and/or shall be conducting its operations in line with the policies of co-ordinated transportation which the association indorses.

"Further, affirmative action of the executive committee at the time of first consideration of such application shall be only tentative; final affirmative action at a subsequent regular meeting shall be necessary before election of the applicant is effected.

"American, as here used, shall be understood to mean 'located inside the United States of America and Canada.'

"In the ordinary association procedure each company member shall be entitled to one vote, which shall be cast by its properly accredited delegate. Any accredited delegate may demand plural voting on any question, in which

case each company member shall be entitled to one vote for each five hundred dollars (\$500.00) or major fraction thereof, of annual dues paid to the association, with a minimum of one vote. Plural voting shall always be used in adopting standards of the engineering association. Representatives of company members shall be entitled to hold office in the association. Company members, whether operating, manufacturer or foreign, shall, in general, be entitled to all of the privileges and services of the association. The executive committee may define, from time to time, other privileges of such members and the amount of service which may be furnished and any additional charges necessary."

Other changes contemplated in the constitution were outlined by H. V. Bozell on the request of C. D. Emmons, chairman of the committee on constitution revision. The executive committee discussed the revisions as they were presented. Action was postponed until the next meeting so as to give each member an opportunity to go over the revised draft in detail.

Recommendations by the policy committee for co-ordinating the efforts of the association and other agencies working in the interest of industry development were presented in a report by Chairman R. P. Stevens, which was as follows:

"First—Your policy committee recommends that the magazine *Aera* be continued substantially in its present form, but with the advertising eliminated, cost of publication reduced, and with closer co-ordination with the technical press, to minimize duplication. Also, that the president be authorized to appoint a committee to work out such a plan, with no increase in expense to the association, and report back such plans to the executive committee.

"Second—That there should also be much closer co-ordination between our statistical department and the technical press as to securing, analyzing and publishing statistics, and that the president be authorized to appoint a sub-committee to work out a plan for such co-ordination, with no increase in expense to the association, and report back such plan to the executive committee.

"Third—Your committee recommends that no action be taken just at the present time as to the Washington office."

Discussion of the committee's recommendations brought out the fact that there has been some misunderstanding in the industry as to the purposes of the study which is being made of the association's publishing policy. Chairman Stevens pointed out that the committee's recommendations were predicated on the continuation of the association magazine in a form most useful to the industry and the association. He explained, further, that the object of the committee's recommendation was the co-ordination of the associa-

### COMING MEETINGS

OF

### *Electric Railway and Allied Associations*

April 13-14—National Automobile Chamber of Commerce, meeting, Chicago, Ill.

April 20-22—American Society of Civil Engineers, spring meeting, Kenilworth Inn, Asheville, N. C.

April 26-29—Southwestern Public Service Association, convention, New Orleans, La.

April 27-29—American Welding Society, eighth annual meeting, Engineering Societies Building, New York City.

May 6—American Electric Railway Association, Metropolitan Section, Engineering Societies Building, New York City, 8 p.m.

May 31—June 1-2—Canadian Electric Railway Association, annual convention, Winnipeg, Man.

June 6-8—American Association of Engineers, annual convention, Tulsa, Okla.

June 24-25—New York Electric Railway Association, annual meeting, Hotel Champlain, Bluff Point, N. Y.

June 29-30—Central Electric Railway Association, summer meeting, Book-Cadillac Hotel, Detroit, Mich.

July 27-29—Association of Equipment Men, Southern Properties, 12th semi-annual meeting, Atlanta, Ga.

Oct. 3-7—American Electric Railway Association, annual convention and exhibit, Public Auditorium, Cleveland, Ohio.

tion's activities and that of the existing industrial press.

The executive committee passed the following motion by J. N. Shannahan regarding the policy committee's report:

"I move that the president be authorized and directed to appoint a committee of five to devise, if possible, a plan to carry out the recommendations of the policy committee."

President Sawyer, in commenting on the discussion and the action taken, stated some of the reasons for the changes in policy advocated. He said that the association's object should be to encourage rather than discourage every agency working constructively in the industry's interest.

For the committee on membership, C. R. Ellicott, chairman, reported the transfer from associate to operating membership of the Illinois Traction System, Springfield, Ill. In addition, one new associate member, five new manufacturer members and 83 individual memberships were reported. A sub-committee on special assignments has been appointed to co-operate with the membership committee, as follows: C. L. Bardo, vice-president American Brown Boveri Electric Corporation; L. C. Brown, vice-president Elwell-Parker Electric Company; B. I. Budd, president Chicago Rapid Transit Company; C. D. Cass, vice-president Waterloo, Cedar Falls & Northern Railway; A. H. Ehle, vice-president Baldwin Locomotive Works; C. D. Emmons, president the United Railways & Electric Company; C. B. Keyes, district manager railway department, General Electric Company; M. B. Lambert, transportation sales manager Westinghouse Electric & Manufacturing Company; L. H. Palmer, vice-president and general manager Fifth Avenue Coach Company; Paul Shoup, president Pacific Electric Company, and J. N. Shannahan, Old Dominion Land Company, Newport News, Va.

Harry Reid, chairman of the committee on national relations, reported the serious illness of C. L. Henry, who had charge of the work at the Washington office. On motion of Mr. Coates, the secretary was instructed to write a letter to Mr. Henry expressing the committee's regret at his illness and hoping for his speedy recovery.

Concerning the work of the sub-committee on depreciation, J. H. Hanna, chairman, said that one meeting had been held to consider the situation in the electric railway industry. A hearing on the depreciation question before the Interstate Commerce Commission is scheduled for May 22. Mr. Hanna said that a second meeting of the committee would be held in Chicago on April 6, at which time a form of questionnaire will be decided upon and the general policy to be advocated by the committee will be determined.

Regarding the Charles A. Coffin Prize, President Sawyer, speaking as chairman of the committee, said that "Electric Railway Practices, 1926" is just about completed and ready for distribution.

Mr. Vickers, economist of the association, made a brief report for the committee on taxation. He said that progress on the work of the taxation committee is being held up pending

determination of the attitude to be taken by the National Electric Light Association and the American Gas Association.

Supplementing the action taken at the last executive committee meeting in Toledo, at which time the presidents or authorized representatives of state and sectional associations were made eligible to meet with the executive committee, F. R. Coates, chairman of the committee on co-operation with sectional associations, suggested that the president of the community section in the locality in which the executive committee meeting is held be invited to attend. This suggestion was adopted.

C. E. Morgan, chairman of the finance committee, read a report by the auditors regarding the association's finances. President Sawyer explained that work of the finance committee is held up to a certain extent pending final decision regarding the policy to be followed in connection with various phases of the association's activities.

#### EXHIBITS TO OPEN SATURDAY NOON

A report of the exhibit committee outlining the progress of plans for the coming convention at Cleveland was read by F. B. Bullock, representing J. H. Alexander, chairman. There were available for the inspection of the executive committee diagrams prepared by the exhibit committee and showing the space layouts for the Cleveland convention. A proposed new building to be located between the main auditorium and the west wing, just off the esplanade between the two buildings, is expected to be available for the meetings of the American and the Transportation and Traffic Associations. Space is to be provided in exhibit hall for the meetings of the Engineering, Claims and Accountants' Associations. It is expected that this arrangement will make the remaining space in exhibit hall more attractive for exhibit purposes. C. E. Morgan, vice-chairman of the exhibit committee, outlined to the executive committee some of the plans that are being made in connection with the exhibit. He called attention particularly to the recommendation that the exhibits be opened at 12 o'clock noon on Saturday, thus giving early delegates an opportunity of inspecting them before the official opening of the convention on Monday. The executive committee approved this plan, also fixing Wednesday as the day set aside for the inspection of exhibits. The convention will close on Friday noon as heretofore. The rate for inside exhibit space was fixed at 75 cents per square foot. T. W. Casey was appointed by President Sawyer as chairman of a special committee of manufacturers to represent the views of exhibitors and to form an official point of contact with the exhibit committee.

Additional hotel space to be available at Cleveland this year was listed by Paul E. Wilson, chairman of the hotels committee. The procedure followed last year of making all room assignments through this committee is to be followed again. Approval of the contract with the Cleveland convention committee was reported by T. A. Kenney, chairman of the sub-committee on contract.

Regarding the Anthony N. Brady

Memorial Medal, Mr. Storrs said that circulars outlining the contest are being sent out to all electric railway companies by the Museum of Safety.

The following were appointed as delegates to the annual meeting of the U. S. Chamber of Commerce to be held in Washington May 3-5: J. N. Shannahan, national councillor; F. R. Coates, Edward Dana, W. A. Draper, C. D. Cass, E. C. Faber, W. F. Ham, R. P. Stevens, S. B. Way and F. H. Wilson.

Alternate delegates who have accepted are as follows: J. H. Hanna, substitute national councillor; H. L. Brown, H. C. Clark, S. J. Cotsworth, C. R. Ellicott, J. W. Hancock and B. A. Hegeman, Jr.

Delegates were also appointed to attend the National Conference on City Planning to be held in Washington May 9 and are as follows: J. H. Alexander, J. P. Barnes, C. D. Emmons, Thomas Fitzgerald, J. H. Hanna, A. T. Perkins, W. W. Wysor.

Presidents of sectional associations in attendance were welcomed by President Sawyer and responded by expressing their desire to co-operate heartily in the work of the American Association.

The next meeting of the committee will be held in New York on Friday, June 3.

#### Rolling Stock

PROGRESS reports were made at the second meeting of the rolling stock division of the American Electric Railway Engineering Association held in Detroit, Mich., March 10 and 11. Those present at the meeting were: A. T. Clark, chairman; W. S. Adams, C. Bethel, W. C. Bolt, R. S. Bull, J. M. Bosenbury, F. J. Foote, R. W. Cost, R. A. Hutchins, M. R. Hanna, T. H. Nicholl, E. S. Sawtelle, R. B. Smyth, W. G. Stuck and H. S. Williams.

The report of the special committee on revision of manual sections contained an outline of the work accomplished so far. Decisions have been reached in regard to revision of certain dimensions of brake shoes and work is being done looking to the revision of the specification of steel axles and wheels. Information is being tabulated regarding couplers in use by various interurban railways and manufacturers will be invited to submit suggestions for revision of the test specifications.

The committee on improvements in car equipment made a skeleton outline of the work which is being covered by this committee and the committee on lighting submitted a progress report with blue prints covering various methods and tests which will be made.

The chairman of the committee on roller bearings reported that a meeting of this special committee was held March 9, at which very thorough discussion was made on the various phases of roller bearing construction. It was decided to send out a questionnaire to obtain additional information.

Special committee No. 6 on lubrication reported that a questionnaire has been sent out to various electric railway men and so far 52 per cent have answered. A test of lubrication will be made by the use of a dynamometer. Progress reports were also submitted by the committees on suction strainers

for air compressors and on motor brushes.

The chairman of the special committee on noise reduction submitted a description of the work done by this committee. It is expected that the noise measuring instruments will be used in connection with several new truck constructions which have been designed to reduce noise.

The committee on gearing is making a study of tolerances with the idea of introducing certain revisions in this

specification. A questionnaire has been sent out by the special committee on current collecting devices and work on this subject is going forward. Progress reports were made by special committees on journal boxes and on limits of wear. In regard to this latter committee, it was decided that the limits of wear to be taken into consideration are axle bearing wear, axle bearing housing wear, axle wear, armature shaft wear, armature bearing housing wear and armature bearing wear.

portation problems today, he said, creates an unprecedented opportunity for the men in the industry.

### Brady Safety Medals Again Offered

FOR the first time in ten years the Anthony N. Brady medals are being offered. At the request of the American Electric Railway Association the contest is being conducted by the American Museum of Safety, with headquarters at 130 East Fifteenth Street, New York City. The next award is to be for the year ended Dec. 31, 1926.

A committee on the award has been appointed, consisting of Lewis Gawtry, president the Bank for Savings, chairman; Col. A. B. Barber, James H. McGraw and Lucius S. Storrs. A committee to determine the conditions of the competition has also been named, consisting of Thomas Fitzgerald, vice-president Pittsburgh Railways, chairman; H. K. Bennett and C. H. Evenson. The plan of award has been somewhat modified. There are to be three medals, as formerly, but each to be given as a first prize to railway organizations, as follows: Gold medal, for electric railways operating more than 5,000,000 vehicle-miles; silver medal, for those operating more than 1,000,000 but not over 5,000,000 vehicle-miles; bronze medal, for those operating less than 1,000,000 vehicle-miles. The committee of award may also, in its discretion, make honorable mention of one or more electric railway organizations, based on the same criteria as the award of the medals, or any other factors that may appeal to it as especially worthy of commendation.

The conditions of the award are, in brief, as follows: Every competing company shall include data covering all its electric railway and bus operations without regard to technical ownership. Presentations should cover broadly and as completely as possible all of the factors prescribed. A definite rating will be assigned by the committee to each of these and a grading will be assigned to each company's presentation based upon the relative accomplishments under each heading.

The factors are: (1) The success in gaining good will as indicated by the initiative, skill and enterprise manifested in improved safety conditions; (2) the improved safety conditions that have resulted from original ideas, as well as the extent to which the company has taken advantage of new development of safety in operating and maintenance practice and equipment originating with others; (3) improvements in safety practice that have resulted in reduced maintenance, or greater reliability of service; (4) particular success in conducting a safety program and actually reducing the number and seriousness of accidents; (5) outstanding accomplishments in development of co-operation between management and employees in safety promotion; (6) outstanding accomplishment in measures to promote sanitation and health. All presentations must be in the hands of the American Museum of Safety on or before Aug. 1, 1927. Details may be obtained from the American Electric Railway Association.

## Humanitarian Motive Predominates in Safety Work

PREVENTION of accidents was the theme of a meeting of the Metropolitan Section, A.E.R.A., held on April 1 at the Engineering Societies Building, New York City. More members were present than at any previous meeting this season. James P. Barnes, president Louisville Railway, spoke on the safety methods used by his company and the good results obtained. The difficulties confronting this railway were brought out when he mentioned that his company operates 14,000 cars every day across steam railroad tracks at 84 different locations.

Safety work was first undertaken for economic reasons. At that time the company was spending 7½ per cent of its gross revenue for accident claims. Now this has been reduced to 4 per cent. It is not the economic side of this achievement, however, which is most gratifying to the management, but the humanitarian side.

When it was first decided to inaugurate a definite movement for the reduction of accidents, the principle was accepted that human failure is back of every accident. The first step was the organization of a safety council among the employees of the railway. Following that a challenge was issued by the men at one carhouse to the men at all other carhouses to see which group could operate during one entire month with the fewest number of accidents per 1,000 car-miles. This proposition originated with the employees but secured the immediate approval of the officials. As a result of this challenge and its acceptance it became necessary to decide upon some classification of accidents and the responsibility for them. The company adopted at that time and has since adhered to the definition that any accident which might reasonably have been prevented by the exercise of care on the part of a trainman is to be charged against him.

From this beginning the work of accident prevention has progressed into a comprehensive and continuing program which covers the entire property. At the start one accident occurred for every 1,800 car-miles operated. It was decided that this must be cut down to one-tenth of that figure. The goal was reached in January, 1927, when the company had only one accident for every 19,000 car-miles operated. The high record for a single month last year was one per 76,000 car-miles.

Together with other organizations interested in accident prevention work,

the Louisville Railway some time ago sponsored the organization of a Life Savers' Club among the drivers of commercial vehicles. Any one who has operated a commercial vehicle in the streets for an entire year without being involved in a single accident is eligible for membership. At the present time there are 219 railway motor-men among the members.

In conclusion, Mr. Barnes emphasized the changed conception of safety work, saying that the program which was undertaken as an economic measure had ended by becoming a humanitarian movement. Nothing does more, he said, to create a bond between the officials and the men than their common interest in safety work.

James J. Duffy, supervisor of the school of instruction Brooklyn-Manhattan Transit Corporation and Brooklyn City Railroad, outlined the accident prevention work of those companies. He explained the bonus plan that has been in effect for the past eight months and said that the total number of accidents had been reduced from 9,518 for a corresponding period the year before to 8,275 under the new plan.

Chester Briggs, a motorman of the New York Railways, spoke on the care necessary in the operation of cars on Broadway, New York City. He emphasized the point that accidents do not "just happen" but are caused by negligence. During the past fifteen months accidents have been reduced 14 per cent on the Third Avenue Railway System, according to William E. Foley, director of claims. Harry C. White, supervisor of industrial relations Edison Lamp Works of the General Electric Company, said that safety is largely a matter of salesmanship by executives. Anything can be accomplished if a sufficiently determined effort is made. He told of certain experiences he had had with Charles P. Steinmetz and stressed the success attained by this great genius in overcoming almost insuperable obstacles.

Before the commencement of the regular program, T. R. Langan, president of the section, introduced W. H. Sawyer, president American Electric Railway Association, and Daniel Durie, president American Electric Railway Engineering Association. Mr. Sawyer told the members that the job before them today is too big to permit telling of hard luck stories. Too much is at hand waiting to be done to waste time in that manner. The complexity of trans-



# The News of the Industry

## Enabling Legislation in Philadelphia

A bill has been introduced in the Pennsylvania Senate to empower the city of Philadelphia to take over the Philadelphia Rapid Transit Company's underlying properties under condemnation proceedings, but requiring a vote of the people. The measure has the approval of Charles S. McChord, utility expert engaged to investigate the transit situation by the Public Service Commission. The proposed new legislation is considered necessary. The bill would permit the city to acquire the underlying companies without taking over the Philadelphia Rapid Transit Company, whereas under the existing Hecht law it is said both the franchise holding companies and operating company would have to be taken over under condemnation proceedings.

The recommendations contained in the McChord report were the subject of a brief review in the *ELECTRIC RAILWAY JOURNAL* for March 26, page 584.

## Another Coffin Contest Announced—Grand Rapids

Plans are being made by Vice-President and General Manager DeLamar to have the Grand Rapids Railway, Grand Rapids, Mich., enter the contest for the Charles A. Coffin award for 1927. In its house organ, the *Token*, for March, the company says in part:

All of which means that from now until July 15 the Grand Rapids Railway must be one of the best, if not the best, in the United States. Many visitors will be inspecting the property, riding the new coaches to determine their superiority over the old style cars, and also to get first-hand information on the kind of service and courtesy we are giving the public. In fact, it means that all of us must be on our best behavior and give the best service possible to prove our brief.

In trying for this award there must be co-ordinated effort. Each of us must give the best in us to improve the service. By pulling together employees of the Grand Rapids Railway can prove that all of the good things broadcast about us are in everyday practice on our system. And the reward may be establishing our company as the best of its size of any in the United States.

Let's go out and win it!

## Baltimore Line Takes Advantage of Gas Rebate

The United Railways & Electric Company, Baltimore, Md., will take advantage of a rebate of 1 cent per gallon on the state gasoline tax which became effective on April 1. Two new laws passed by the Maryland General Assembly add 2 cents to the former 2-cent gasoline tax. Of the increase 1½ cents is for lateral roads in the state and the other ½ cent is to help defray the expense in eliminating grade crossings.

A provision in the law creating the lateral road tax enables the owners of buses, trucks and other vehicles used entirely within the limits of incorpo-

rated cities and towns to receive a rebate of 1 cent per gallon on gasoline used by such vehicles. The United Railways & Electric Company operates 50 passenger buses within the limits of Baltimore.

## Home Rule Defeated in Chicago

Sight of the local railway problem was largely lost in Chicago's bitterest mayoralty campaign, which ended on April 4. Candidates of both major parties soft-pedaled the issue, but the vote of less than 60,000 for John Robertson, independent candidate, indicates public ownership and 5-cent fare talk was not taken seriously. William Hale Thompson, successful candidate, polled 41,000 more votes than his opponents combined.

The present Mayor, William E. Dever, stood on his record of efforts to win home rule and unify local transportation under a new franchise. Mr. Thompson offered stereotyped promises of a fair deal to all. In his previous administration he sought to cut 8-cent car fares to 5 and in his effort at a political come-back charged that the 1925 city purchase referendum and the present franchise negotiations were evidence of Mr. Dever's subservience to traction interests. Mr. Dever accused Mr. Thompson of displaying favoritism to Mr. Insull by attempting to block the city's fight to lower gas and electric rates and by squelching opposition to the State Commerce Commission's order increasing elevated fares to 10 cents in 1920. Mr. Dever pointed pridefully to his fight on the Barr terminal permit bill and his strong advocacy of the Durso bill, now pending, which would create a local utility commission.

Mr. Robertson flooded the city with sensational literature denouncing New York banker control of the surface line companies and insinuated that the companies had contributed to the campaign of his opponents. He pledged himself to stand by the straphanger and bring about a public ownership referendum.

With the election over it is hoped the City Council will resume consideration of the plans for a franchise settlement, dropped last February. The ray of hope here is not brilliant, for many of the Aldermen seem to be confused by the complexities of the franchise task and a second temporary extension of the franchise of the Surface Lines may be necessary.

Only 15,000 votes stood in the way of adoption of a home rule amendment voted on in Chicago on April 5 on the petition of 260,000 citizens. This amendment would have taken control of all local utilities from the hands of the Illinois Commerce Commission and vested it either directly in the Chicago City Council or in a local commission created by the Council. The measure was fashioned after the state public utilities act and would have taken effect almost immediately.

## Paving Relief Bill Defeated in Detroit

The proposed charter amendment designed to relieve the Detroit Department of Street Railways, Detroit, Mich., from the cost and responsibility of paving between the tracks was defeated by an overwhelming majority of the 60,000 voters who went to the polls on April 4. Early returns indicated that the proposition was defeated in at least 75 per cent of the city precincts. The proposed amendment was sponsored by Mayor Smith and the Street Railway Commission.

It was pointed out that the cost of paving between car tracks amounted to between \$600,000 and \$700,000 annually. The charter amendment as it appeared on the ballot also provided for removing the cost of repaving and watering between the tracks. The measure fixed a rate of fare on the municipal system sufficient to pay:

(a) Operating and maintenance expense exclusive of paving, repaving and watering between tracks.

(b) Taxes on the physical property of the entire railway system the same as though privately owned.

(c) Fixed charges.

(d) A sufficient per cent per annum to provide a sinking fund to pay the principal of the mortgage bonds issued, at their maturity, and such other additional per cent per annum to provide, in the sound discretion of the board, a sinking fund to pay the principle of the general bonds issued as soon as practicable, to the end that the entire cost of the railway shall be paid eventually out of the earnings thereof.

## Boston & Worcester Decision in May

The petition of Receiver Miller of the Boston & Worcester Street Railway, Framingham, Mass., in which he seeks to gain authority to operate buses instead of trolleys as he sees fit, was heard a second time before the Supreme Court recently. Representatives of the bondholders of the railway who are seeking to reorganize the road were successful in securing a postponement of the decision in the matter until May 3.

At the hearing it was stated that actual steps in the reorganization proceedings had taken place. The Boston & Worcester Street Railway has bonds outstanding to the amount of \$2,460,000, while the Framingham, Southboro & Marlboro line, which is controlled by the Boston & Worcester, has bonds outstanding to the amount of \$60,000.

The Boston & Worcester Street Railway reorganization plan proposes formation of a new company to have \$252,000 first mortgage 20-year 7 per cent bonds, \$756,000 reorganization bonds to be secured by second mortgage,

\$756,000 of 6 per cent preferred stock and \$1,388,000 common stock. Each depositor, whether a subscriber for first mortgage bonds or not, will receive for each \$1,000 bond, plus any accrued interest, \$300 face amount of reorganization bonds, \$300 par value of preferred stock and \$400 par value of common.

### Cincinnati's Community Chest Subsidized by Railway

A gold mine of good will was discovered by Hudson Biery, Director of Public Relations of the Cincinnati Street Railway, Cincinnati, Ohio, in the small fare announcement board in the front of the street cars when he converted it into a medium for advertising Cincinnati's social agencies. This board which had established itself in people's minds as the place to find notices of increase in fares, was performing no present service. No change in fares had taken place for more than a year.

Under the heading "Do You Know," a 25-word message is carried in this space for each of Cincinnati's humanitarian enterprises, each one appearing for half a week in all cars. This series of advertisements will last more than a year.

The service-at-cost franchise, under which this system operates, does not permit a cash donation and the advertising, donated to the ninety-two members of the Community Chest, is directed to tell the public what each group is really accomplishing.

A typical message is as follows:

Do You Know?

The Salvation Army gave 208,137 meals, supplied 73,854 beds and gave garments, shoes and medical aid to 7,856 in 1926. Individuals helped, 56,045. Aided by the Community Chest.

A small trade mark of the railway appears in the lower right-hand corner as it was the only way of showing that the company was donating the space.

The *Times-Star*, the *Post*, the *Enquirer* and the *Commercial-Tribune* are co-operating by carrying each new message as it appears in the cars.

### 1928 Calendar Announced by Safety Council

While the present time seems early for 1928 calendars, the National Safety Council has adopted a new policy by producing its calendars ten months in advance in order that its member companies may obtain a supply early.

The calendar is the most artistic ever put out by the National Safety Council. A picture for each month carries a special safety message appropriate to the season. The pictures are by well-known artists and are excellently reproduced. On the reverse side of each sheet is a safety message.

A schedule of prices has been worked out, the price depending on the quantity. Discounts are allowed for early orders and shipment, being greatest at present and reducing monthly until July 1. As is customary, there is a space on the face of the calendar in which the name of the company distributing it may be inserted.

Those desiring further information should communicate with W. H. Cameron, managing director, 108 East Ohio Street, Chicago, Ill.

### Corporation Counsel Says Chicago May Bar Downtown Parking

Citing numerous court decisions in which the authority of cities to prohibit the obstruction of the streets by parking has been repeatedly upheld, the law department of the city of Chicago recently presented an opinion on this question to Mayor William E. Dever. A special committee on downtown parking appointed by the Mayor early in January following publication of the \$50,000 traffic survey by the Chicago Association of Commerce has had the subject under consideration for several months, but as yet no meetings have been held or other action taken.

It was to ascertain what can be done to restrict parking in Chicago's congested business streets that the opinion was prepared. According to Corporation Counsel Francis X. Busch, who approved the document, "the city council has the legislative power, both in principle and authority, to enact ordinances for restricting in proper cases the use of the streets for parking, standing and storage purposes, where the same is deemed by the Council to impair the use of the streets for the passage and travel of the public, or to interfere with the ingress and egress of abutting property."

Though all such ordinances are subject to judicial review and condemnation when plainly arbitrary or unreasonable, Mr. Busch points out, they must be presumed reasonable and valid until proved to be otherwise, and should therefore be enforced by the administrative and executive officers of the city.

The parking of cars, except for the loading and unloading of persons or goods, is storage and standing, in the opinion of the corporation counsel's office. "Such standing or parking of vehicles upon the streets amounts to the use of the streets for the purpose of storage and not for the purpose of travel," Mr. Busch declared. "It makes no difference whether such periods of storage use continue for a few minutes only or for much longer periods. The character of the use of the streets will not be different whether such vehicles be left unattended or left in charge of a driver or other caretaker awaiting the return of an owner or occupant having general control and direction over the vehicle, nor will the character of that use be changed whether the person so parking shall be the owner or occupant of property abutting on the street, or any other member of the general public."

Among the various authorities quoted by the city attorney was the Illinois Supreme Court.

### Legislative Results in New York Considered Disappointing

The day of legislative reckoning in New York State was concluded with Governor Smith's "Finis" on April 7. Some constructive work was done. But the opinion seems to prevail at Albany that the session just closed will go down in history mostly for what it did not accomplish rather than for what it did do. As an instance, all of the gasoline tax bills failed of passage. A measure drawn just before the ad-

journalment of the Legislature imposing a tax of 1 cent a gallon which it was proposed to introduce on the closing day of the session was abandoned by the legislative leaders.

Compulsory motor vehicle insurance for all cars also met with disapproval of the legislative leaders. The bill transferring the provisions of the highway law, in relation to motor vehicles to the tax law, passed by the Legislature, was withdrawn from the Governor due principally to the fact that so many amendments were offered to the highway law which had been passed that to have re-enacted the provisions of the law into a new law might have left a situation whereby the state would have been without any motor vehicle law at all until the Legislature could meet and correct the situation.

Some bills that have become law follow:

Chapter 278 the Bartholomew bill, Assembly print No. 1,456, amending highway law in relation to deposit with commissioner of motor vehicles of number plates of uninsured car.

Chapter 296 the Bartholomew bill, Assembly print No. 1,099, amending highway law in relation to operation of motor vehicle while license is suspended or revoked.

Chapter 271 the Bartholomew bill, Assembly print No. 1,093, amending highway law in relation to motor vehicles carrying passengers for hire.

Chapter 272 the Bartholomew bill, Assembly print No. 1,097, amending the highway law in relation to keeping clean number plates on motor vehicles.

Chapter 274 the Bartholomew bill, Assembly print No. 1,091, amending the highway law in relation to registration fees for trailers.

The Pammenter bill, Assembly print No. 947, as chapter 152, amending the town law authorizing appropriations by the town board for the purchase and maintenance of traffic signals.

### Track Space Being Sought for October Convention

Following on the heels of the application of J. R. Blackhall of the Chicago & Joliet Electric Railway for track space to show one of his new cars at the October convention of the American Electric Railway Association, Thomas Conway, Jr., president of the Cincinnati, Hamilton & Dayton Railway, has advised Fred Dell, director of exhibits, that he will also want track space upon which to show at least one or perhaps two of his new cars if traffic conditions permit of the withdrawal of two from service at that time. These cars are low-level, high-speed interurbans, designed and equipped for train operation.

By no means does this exhaust the good news. Mr. Dell has also received a letter from H. B. Potter, general manager of the United Railways & Electric Company, Baltimore, making application for track on which he intends again to exhibit one of his articulated cars this year. In addition, and owing to the recent research and development work which the United Railways has been conducting, Mr. Potter has indicated he intends to have inside booth space in which he will show some very interesting models of rheostatic car heaters, automatic slack adjusters, articulated car parts, etc.

These requests for track space at this early date, six months prior to the convention, indicate that the track exhibit will surpass the magnificent showing of 41 car units at Cleveland last year.

### Foshay Company Announces the Judges in Advertising Contest

Judges who will decide upon the prize winners in the \$5,000 advertising contest of W. B. Foshay Company are B. C. Forbes of *Forbes Magazine*; Col. W. N. Wamsley, manager financial bureau *New York Times*; Edson B. Smith, financial editor *Boston Herald-Traveler*; Harper E. Leech, feature financial writer *Chicago Tribune*; E. C. Hillweg, assistant publisher *Minneapolis Tribune*; Carl W. Jones, general manager *Minneapolis Journal*, and Wilbur B. Foshay, president W. B. Foshay Company.

As announced previously in the *ELECTRIC RAILWAY JOURNAL* the W. B. Foshay Company, public utility operators, started a contest on Nov. 1, 1926, for the submission of either a series of newspaper advertisements or some other form of advertising such as a folder, single booklet, slogan or other form advertising the W. B. Foshay Company's system of controlling and managing public utilities and selling the securities of these companies. The contest, an open one, closes on April 30 and the prizes will be awarded on June 1, 1927. All advertising material is to be sent to contest editor, W. B. Foshay Company, Foshay Building, 826 Second Avenue, South, Minneapolis, Minn.

### Chicago Surface Lines Awards Prizes for Accident Prevention

For the best record in accident prevention of any division of the Chicago Surface Lines during 1926 motormen and conductors at the North Avenue station were awarded first prize at the annual safety dinner of the company in the Congress Hotel, Chicago, on March 3. The award was made by Guy A. Richardson, vice-president, and the large plaque given as first prize was accepted by William Pasche, division superintendent. The second prize, an artistic shield, was won by the Lincoln Avenue division.

The contest, engaged in by all of the twelve divisions of the system, began a year ago and was concluded on March 1. About 500 employees of the company attended the dinner. Among them were the oldest trainmen from the winning divisions, some of whom have been in service for from 25 to 40 years. A new contest was begun to continue throughout the current year.

### New Oneida Fares Approved

The city of Oneida, N. Y., having withdrawn its objection to proposed fares on the Oneida line of the New York State Railways, the Public Service Commission on April 1 approved of the following fares on and after May 1:

- Between any two points in Oneida, 10 cents.
- Between any two points in Sherrill, 10 cents.
- Between Oneida and Sherrill and points intermediate thereto, 10 cents.
- Between Oneida and Wampsville and points intermediate thereto, 10 cents.
- Between Wampsville and Oneida Castle and points intermediate thereto, 10 cents.
- Between Sherrill and Oneida Castle and points intermediate thereto, 10 cents.
- With the privilege of purchasing three tickets for 25 cents, each to be good be-

tween any of the two points named where the fare is 10 cents.

For single trip rides between Oneida and Kenwood, 10 cents.

Fifteen cents per ticket for round trips good between Oneida and Kenwood.

Fifteen cents per ticket for round-trip tickets good between Oneida and Wampsville, but such round-trip tickets to be good only on interurban local cars.

A 30-day 50-trip commutation book for \$2.50 between Oneida and Sherrill and also between Oneida and Wampsville, and to cancel the 46-trip school ticket between said points, now sold for \$2.75.

Petition for increased fares was filed by the company on April 9, 1926, and hearings held before Commissioners Lunn and Van Voorhis on July 12, 1926, and March 25, 1927. Decision was withheld pending hearings on similar applications filed by the company for increased fares in Rome, Utica and Syracuse. At the hearing on March 25, 1927, the city was represented by Charles R. Coville, city attorney, and at his request the company made certain changes in its proposed schedule. Later the city withdrew its opposition.

### Celebrate Twenty-five Years of Service in Salt Lake City

An organization known as the "Quarter Century Club" has been formed by veteran employees of the Utah Light



Salt Lake City company honors veterans

& Traction Company, Salt Lake City, Utah. Every employee with a continuous service record of 25 years or more is eligible to membership, regardless of the department in which he may be employed. Thirty-four members are now enrolled.

The organization of the club was featured by a dinner on the evening of Jan. 28, at which the members were guests of the management. George W. Manning, traffic superintendent of the company, was elected president of the club. G. A. Partridge was chosen vice-president and Miss Flora Manning secretary.

### Tax Commissioner Renews His Plea for Relief

Electric railways should be absolved from paying costs of paving between car tracks and 2 ft. outside. So said State Tax Commissioner John Merrill on March 9 at the winter meeting of the State Conference of Mayors.

Mr. Merrill spoke somewhat along the lines of his recent utterance in *New York*, reviewed in the *ELECTRIC RAILWAY JOURNAL* for Feb. 5, page 260.

### Awards to North Shore Employees for 1926 Business Tips

More than 500 employees of the Chicago, North Shore & Milwaukee Railroad gathered at the Hotel Sherman in Chicago recently to celebrate with a dinner and appropriate speech-making the successful completion of the company's Better Business Campaign conducted during 1926.

This event was unusual in the annals of the electric railway industry inasmuch as the North Shore line is believed to be the first transportation organization to enlist its employees in an organized effort to obtain new business. Those present included the individual prize winners, members of the leading teams and their wives and friends.

At the time the campaign was started in January, 1926, the North Shore line management offered \$5,000 prize money for those individuals and teams making the best record in securing new passenger and freight business during the year. In the course of the drive a total of 7,714 tips were turned in to the traffic department by 647 employees. Cash prizes ranging from \$250 to \$10 were awarded 76

employees at the big banquet, which was the award for the leading teams.

The entire North Shore line personnel was organized into teams and each team was assigned a quota of new business each month. The excellent results attained are shown by the fact that the highest team averaged 430 per cent of its quota for the year.

Recent expansion of the company's facilities, including service over the new \$10,000,000 Skokie Valley route, purchase of electric refrigerator cars and flat car-trailer equipment, 20 new passenger cars and three new diners and construction of new passenger stations and a \$125,000 garage, was the incentive for the increased traffic drive.

As a result of the success attending the first campaign and the splendid effect upon employee morale another drive has been launched for the present year and is already witnessing the establishment of new high records.

A similar campaign of traffic solicitation by employees of all departments was initiated last month by the Chicago, South Shore & South Bend Railroad under the active leadership of Charles H. Jones, general manager.

## Increased Wage Sought in New York State

A straight increase of 9 cents an hour for employees of the New York State Railways in Rochester, Syracuse and Utica, N. Y., is demanded by the union in the first negotiations for a new wage and working agreement for the year starting May 1. The demands of the employees, as framed by a joint board of union executives, were read at a meeting of the men in Rochester on April 1. In replying to the demand, James F. Hamilton, president of the railways, said that the increased cost of improvements in the three cities will prevent the granting of the pay boost at this time. Chief among the increased expenses was cited the mounting cost of paving improvements.

The union contends that the recent fare increases in the three cities justify an increase in wages. In Rochester the fare was raised from 7 to 8 cents on Jan. 1, 1925; in Syracuse and Utica the fare has been increased to 10 cents within the past few months.

The present scale for motormen and conductors in cents per hour on two-man cars is 55 cents, on affiliated inter-urban lines 57 cents and for operators of one-man cars 60 cents.

Further negotiations are under way, with a conference between railway and union officials scheduled for April 20. The contract calls for arbitration.

## Rapid Transit Measure for St. Louis Is Dead

The rapid transit enabling act for St. Louis, Mo., died with the Missouri General Assembly on April 2. Major C. E. Smith, consulting engineer for the city, has stated that if the bill was not passed it was virtually useless to talk of constructive steps toward building a rapid transit system for St. Louis until the next meeting of the Legislature in January, 1929. The rapid transit system contemplated would cost upward of \$100,000,000.

Under the bill as originally drawn the people of the city were empowered to decide at the polls the way in which they desired to pay for a rapid transit system. As amended the bill requires financing looking toward higher fares.

Downtown property owners were the principal objectors. They claimed that the measure as drawn would have given the Board of Aldermen unlimited authority to assess special benefits against property for the payment of the subway. These property owners want 40 per cent or less assessed against downtown property, the city at large to pay the balance of the estimated \$200,000 needed to build a complete rapid transit system.

## P.R.T. Consolidates Its Business and Executive Offices

The Philadelphia Rapid Transit Company, Philadelphia, Pa., has leased more than half of the floor space in the new Equitable Building, located at the corner of Broad and Locust Streets. Twelve office floors will house the office forces of the parent company and of its various subsidiaries, while the mezzanine floor will be converted into a bus ticket office and waiting room. In addition Mitten Management has leased the entire twentieth floor for its executive offices. Heretofore the executive offices of P.R.T. and of Mitten Management have been located at 1520 Spruce Street, while the general business offices were at Eighth and Dauphin Streets. Other offices were located in the Land Title Building, the Liberty Building and the *Bulletin* Building. It is understood that all of these are to be relinquished at the time the move to the new location is effected.

Under the new arrangement all officials of the companies will have their offices in the Equitable Building, save for the actual operating supervisors. The transfer to the new building will be made during the current year. The company believes that considerable economies can be effected through the centralization of general and executive office functions.

## Louisville Award Presented

The Anthony F. Connelly award for 1926 was presented to Lewis Elmore, motorman, Fourth Avenue carhouse, at the February safety dinner held in Safety Hall of the Louisville Railway, Louisville, Ky., on March 15. Mr. Elmore was selected from among some 50 men of the company as the employee qualified to receive the designation "best public servant." James P. Barnes, president, presented to Mr. Elmore the Connelly award, consisting of the Gold Award Medal, \$75 in gold and an invitation to be the guest of the company at the annual convention of the American Electric Railway Association to be held at Cleveland next October. Mr. Elmore has been employed by the company for the past eight years.

## Transfers Simplified in Houston

A simplified form of transfer will hereafter be used on the street cars and buses of the Houston Electric Company, Houston, Tex. Carl B. Frazier, superintendent of traffic, says the new transfer has the names of the street car and bus lines grouped into six divisions, exclusive of South End, Kensington, shuttle and car to car changes. Under the new plan the operator will punch the name of the car line upon which the transfer is issued and it will be good on any of the other lines in the city except those named in the same group as the line from which it is issued. It will be good on cars in the same group as the line from which it is issued at the first point of intersection.

Operators will have only to punch the name of the line on which they are working, the time, and if inbound or outbound. Under the old system they punched the line to which the passenger wished to transfer, the line from which the transfer was issued, the date and the time. Each transfer had to be punched as it was called for. Under the new plan the operator can punch a number of transfers at the end of his line sufficient to last him on his inbound trip, and on the outbound trips all he will have to punch is the designation that the transfer was issued while the car was operating outbound.

## New Disposition for Lost Articles in Atlanta

A new method of disposing of unclaimed articles found originally on its cars has been adopted by the Georgia Power Company, Atlanta, Ga. The wives, mothers and daughters of the employees are organized into a women's auxiliary, which is again divided into six groups. Each month unclaimed articles are turned over to one of the women's auxiliary circles, which holds an "old hoss" sale. The money thus secured is placed in a special fund for charitable purposes giving the organization a definite and considerable sum for welfare work.

The company found that the old method of keeping the articles for 30 days at the office of the starter resulted in an accumulation of stock which every month or two had to be given over to the Salvation Army or some other organization. Although the honest trainman frequently became the unexpected owner of an umbrella for himself or a bag for his wife, it is said he, too, lost interest in the arrangement.

## News Notes

**Seek Wage Increase.**—Employees of the Sioux City Traction Company, Sioux City, Iowa, members of the Amalgamated Association, are asking a 10 per cent increase in their wage scale, which expired March 1. The scale is now 56 cents an hour maximum down to 51 cents. The company recently increased its fare from 7 cents to 8 cents. One-man cars are used exclusively.

**Franchise Law in Missouri Killed.**—The proposed perpetual franchise law for Missouri died with the General Assembly on April 4, being on the calendar of the Senate when the final adjournment was taken. The bill had been reported favorably by the Senate judiciary committee, but amended so as not to apply to St. Louis or Kansas City. Public utilities of the state had favored the measure, which was also supported by the Missouri utilities, including the North American Company, the Studebaker organization and many others.

**Hearing in Council Bluffs on April 11.**—Hearing in the fare case of the Omaha & Council Bluffs Street Railway, Council Bluffs, Iowa, has been adjourned until April 11, giving the city time in which to prepare its side of the case. Four weeks time has been consumed in presenting the railway testimony before Special Master Claude R. Porter in Council Bluffs. The value of the property used in giving service is to be determined and also the rate of return. Then a fare rate will be decided.

**Madison Tries Free Ride.**—The Madison Railways, Madison, Wis., in conjunction with the city's leading department store, has solved the problem for the store of increasing the number of shoppers during the quiet morning hours. This difficulty was successfully overcome when the store leased the railway system between the hours of 9

and 12 a.m. on March 29. Approximately 2,000 persons were carried free by the company's cars during these three hours. Store officials declared the success of the plan fully merited the expense involved.

**Council Approves Rate Increase.**—An ordinance raising rates on the Iowa Southern Utilities Company in Burlington, Iowa, from 7 cents to 10 cents for cash fares and the purchase of tickets in blocks of three for 25 cents has been passed by the City Council.

**Upholds Paving Order.**—The Appellate Division of the Supreme Court at Albany, N. Y., has upheld the order of the State Public Service Commission directing the International Railway, Buffalo, to pave a 2-ft. strip along its tracks in Walden Avenue and in Grant Street and to reconstruct its roadbed in these two streets. The International appealed from the order of the commission, issued in December, 1925.

**Applies for Fare Increase.**—The Kansas City, Clay County & St. Joseph Railway, Kansas City, Mo., has applied to the Missouri Public Service Commission for an increase in rates from 2½ cents to 3 cents per mile effective on May 1. This company operates an interurban between Kansas City and St. Joseph, a distance of 50 miles, and a branch between North Kansas City and Excelsior Springs, a distance of 32 miles. If increased fares are not granted officials of the company state it will not be possible to pay even interest on the outstanding bonds. The estimated receipts for 1927 are \$759,279 under the 2½-cent fare and \$843,615 under a 3-cent fare. The former figure would fall short by \$14,000 of paying interest on bonds.

**Ten Cents in Macon.**—A 10-cent fare with the privilege of selling four tickets for 30 cents was allowed the Macon Railway & Light Company, Macon, Ga., by a recent decision of the City Council. The old fare was 7 cents. The company was also relieved from paying further paving assessments and permitted a complete change in the routing of its cars so that practically all will have terminals in the downtown district instead of operating from one side of the city to the other. The request in the petition, filed by the company on March 15, looking toward relief of a gross income tax, now amounting to 2 per cent, was denied.

**Rebate Slips for Dilatory Coin Dropper.**—Because of numerous complaints from passengers who inadvertently or accidentally drop more change than is necessary in the Johnson fare boxes, the Southern Colorado Power Company, Pueblo, Col., is using a rebate slip. Inasmuch as one of the mottoes of the Byllesby organization is "Never forget that your company is a public servant that wants no dollar it does not fairly earn," a system has been devised wherein the operator punches the amount of overpayment, which is collectible by the bearer at the company's offices. Heretofore there has been no practicable way in which the operator could repay the customer as he was charged with all coins registered. The new system protects the operator and avoids ill feeling on the part of the customer.

## Recent Bus Developments

### Bus Regulatory Measure Before Missouri Governor

The Missouri Senate has passed the amended House bill providing for the regulation of bus lines in the state. The measure is now before Governor Baker, who has stated he will sign it.

The bill places the People's Motorbus Company, St. Louis Bus Company and other lines of the United Railways, St. Louis, under the control of the Missouri Public Service Commission, but the strictly city lines will not be compelled to pay the special bus taxes, nor is the city deprived of the right to control the use of its streets and regulate the use of buses operating within the corporate limits. However, if a St. Louis bus company sought to extend or change its routes it would be compelled to obtain a certificate of convenience and necessity from the Public Service Commission. That body is also given jurisdiction over the fares to be charged by bus companies.

The bill also provides that the Public Service Commission in considering applications for certificates of convenience and necessity for a bus company to operate or extend its lines shall take into account the transportation service being furnished by any railroad, street railway or motor carrier and shall pass upon the likelihood of the proposed service being permanent and continuous.

### Oil-Electric Bus Developed in Philadelphia

Experiments in the use of fuel oil in driving gasoline-electric buses are being carried on by Mitten Management in Philadelphia, according to a recent announcement. Apparatus has been devised by which the changeover can be made at an approximate cost of \$50 per bus, it is said.

Double-deck bus No. 300 of the Philadelphia Rural Transit Company has been operating on a regular city route for several months equipped with the fuel-oil apparatus. It has run more than 15,000 miles and its mileage per gallon of fuel oil is reported to be slightly in excess of the average miles per gallon of gasoline. The official statement declares that the use of fuel oil will not only effect a substantial saving, due to the fact that its cost per gallon is about one-half that of gasoline, but that it will provide a greater factor of safety because oil is less inflammable than gasoline.

In a report to T. E. Mitten on the subject, J. A. Queeney, vice-president of Mitten Management, under whose direction the fuel oil feature has been developed, had this to say:

The work has now progressed to the point where we feel confident that our gasoline-electric buses can be successfully operated with fuel oil. The first bus so equipped—a double-deck—is now in regular daily service on Broad Street and up to date has made approximately 15,000 miles. Its general performance is satisfactory.

The engine of the oil-electric bus is

started with gasoline and thereafter operates on fuel oil. The change from oil to gasoline is made automatically, no action by the driver being necessary.

While I am not yet ready to recommend that the engines of all our motor buses be arranged for operation with fuel oil, as we still have a number of refinements to make, nevertheless sufficient progress has been made to demonstrate to our satisfaction that it is thoroughly practical to operate on fuel oil, and this work will be carried forward as rapidly as possible.

### Blue Goose and Purple Swan End Hostilities

The Purple Swan Safety Coach Lines discontinued its St. Louis to Alton, Ill., service on April 1, abandoning the field to the East St. Louis & Suburban Railway and its subsidiary bus line, the Blue Goose line. To the same railway and bus properties it had previously given a monopoly of the trade between St. Louis and Belleville.

The Purple Swan company opened service between St. Louis and Alton on Aug. 1, fixing its rates at 75 cents for one way and \$1.25 for the round trip. The electric railway at that time was charging \$1.86 for the round trip. When the competition began to cut heavily into the receipts of the car lines the Blue Goose bus line entered the field as an auxiliary to the street cars. At the same time the round-trip rate on the electric line was slashed to \$1, while the service was greatly speeded up.

Following the abandonment of the Purple Swan line from St. Louis to Belleville, the East St. Louis & Suburban Railway on March 27 put into effect a new schedule of street car and bus fares between these two cities. The rates are practically the same as were charged prior to the competition of the Purple Swan line with the Blue Goose Bus Line, operated by the railway. The new rates are: Street cars, 39 cents one way and 60 cents round trip on date of sale and 70 cents for round trip with fifteen-day limit. The bus fare is a flat 45 cents for one way.

**Buses Will Supply Service.**—Discontinuance within the next 60 days of the interurban line which the Wisconsin Public Service Corporation has been operating at a loss for many years between Two Rivers and Manitowoc was agreed upon at a joint meeting of railway officials and representatives of the two city governments held at Two Rivers on March 24. Four new interurban buses of 25 passenger capacity will be purchased at a cost of \$48,000 to supply 30-minute service between the two cities. Bus fares between the cities will remain the same as charged by the interurban, while city fares on buses in Manitowoc will be 10 cents. Interchangeable transfers will be issued to city and intercity patrons without charge. The interurban tracks between Manitowoc and Two Rivers will be replaced with a 30-ft. concrete highway at the expense of the county.

## Financial and Corporate

### Sale Date at St. Louis Set

Property of Railway There to Be Sold Under Foreclosure Probably by May 12

United States District Judge Faris of St. Louis, Mo., on April 1 ordered the public sale of the United Railways, which went into receivership in April, 1919. He approved the recommendation of Special Master Williams that the property be foreclosed and appointed former Congressman William L. Igoe to conduct the sale. The date for the sale was not fixed by the court, but it is likely it will occur about May 12.

It is almost certain that the only bidder at the sale will be the St. Louis Public Service Company, formed by the reorganization committee to take over and operate the system upon the termination of the present receivership. If the property is sold to the reorganization committee Judge Faris would then be called upon to approve the plan of reorganization.

Under the reorganization plan the common stock will be wiped out, but the preferred stock holders will have the right to purchase the common stock of the St. Louis Public Service Company at \$12.50 a share.

Judge Faris has fixed an upset price of \$46,600,000 for the property. This is sufficient to cover the entire issue of United Railways general 4 per cent bonds and \$2,300,000 of suburban consolidated bonds. There is \$30,300,000 of the United Railways general bonds outstanding.

Negotiations between the city officials and J. K. Newman of Newman, Saunders & Company, agents for the reorganization committee, relative to a service-at-cost franchise for the railway were resumed on March 31. Little was accomplished at the March 31 meeting as Mayor Miller told Mr. Newman further conferences would be useless until the Public Service Commission hands down its decision on the company's application for an 8-cent fare.

The reorganization committee desires to earn 7 per cent on a valuation of \$60,000,000 for the first five years under a 30-year franchise, but Mayor Miller has been contending the company should accept 6 per cent on a valuation of \$51,781,348 as of 1919 fixed by the Missouri Public Service Commission plus additions and betterments of about \$6,000,000 since that date. This would make the final valuation about \$58,000,000.

It is expected that the Public Service Commission's decision on the 8-cent fare application may also include a recommendation as to whether the city should allow a 6 or 7 per cent return.

Recently when Receiver Rolla Wells went into the federal courts in an attempt to obtain an 8-cent fare at once he contended that the real valuation of the railway property is \$75,000,000.

That move indicated that if the city is not willing to accept the \$60,000,000 valuation and grant the reorganized company a 30-year blanket franchise under the service-at-cost plan, it is probable the company may enter the courts for the right to obtain a reasonable return upon a valuation of \$75,000,000.

### Traffic Fare and Wage Figures

While there was a slight increase in the electric railway passenger traffic in February, 1927, compared with February, 1926, the increase was much less than has been generally reported in recent months. This is attributed to the extraordinarily good weather conditions during the month, compared with February last year, when there were a number of severe snowstorms.

The number of revenue passengers, including bus passengers, reported to the American Electric Railway Association by 216 companies is as follows:

February, 1927.....	781,891,790
February, 1926.....	779,296,724
Increase, per cent.....	0.33

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

	Cents
March 1, 1927.....	7.8194
February 1, 1927.....	7.7827
March 1, 1926.....	7.65432

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

	Average Hourly Rate, Cents	Index Number 1913 = 100% Per Cent
March 1, 1927.....	56.97	209.06
February 1, 1927.....	56.94	208.95
March 1, 1926.....	56.66	207.93

### \$279,075 Received from Ottawa Electric in 1926

In the thirteenth annual report of the Ottawa Traction Company, Ltd., Ottawa, Canada, T. Ahearn, president, stated that the amount received from the Ottawa Electric Railway for the year ended Dec. 31, 1926, was \$279,075, with which was paid the usual quarterly dividends of 1 per cent and a bonus of 1 per cent.

Following the signing of the new agreement with the city of Ottawa in January, 1924, the company had successfully carried on the rehabilitation and modernizing of its railway system. Every department has been carefully scrutinized and its assets put into first-class condition. With the exception of eighteen cars, all the passenger rolling stock is either new or has been rebuilt along modern lines.

A bus department was organized in 1924 and, the report states, consists of nine 21-passenger Reo buses and an up-to-date garage. Mr. Ahearn states that this department is making steady progress and has already justified its creation.

The new car shops were constructed after a careful study of the latest shops in the eastern part of Canada and the United States and embody the latest ideas in shop design. With the shops is carhouse accommodation for about 50 cars, the whole building being arranged so that as more shop accommodation is required with the growth of the system it can be taken from that part of the building which is now used for housing cars.

The entire construction program, entailing an expenditure of \$2,250,000, was carried out without interruption.

Mr. Ahearn says that the efforts of the company during 1926 were directed toward the maintenance of the plant and equipment in an efficient condition.

### Character of Missouri Interurban Road's Business Changing

Total gross earnings of the Kansas City, Clay County & St. Joseph Railway, St. Joseph, Mo., for 1926 from operation were \$828,176, representing a decrease of \$46,239 in comparison with the year 1925. Total net earnings available for interest charges, reserves, etc., for the year 1926 were \$222,318, or \$35,680 less than in the previous year. After providing for interest on the company's bonds and miscellaneous deductions aggregating \$157,358 the year's operations showed net income available for reserves and surplus of \$64,959. Of this amount, \$17,359 was appropriated for the reserve for depreciation.

During the year \$102,000 principal amount of the company's bonds were retired through operation of the sinking fund. There remains in that fund a balance of \$50,036 which may be used for the retirement of additional bonds or withdrawn for capital additions to the property.

Approximately 23 per cent of the gross revenues were derived from freight transportation. The character of the freight traffic handled by the road is undergoing a change. There has been a decrease in the less-than-carload or package business due to sharp competition from motor trucks. However, the carload movement has greatly increased. Intensive work is being done to increase joint rates and routes with more of the steam railroads of this territory and to locate along the property of the company active industries productive of carload traffic. The company has physical track connections with the Chicago Great Western, Chicago, Burlington & Quincy and the Chicago, Rock Island & Pacific Railway and indirect connections with all other steam railroads at Kansas City and St. Joseph. Through these facilities approximately 3,500 carloads of freight moved inbound or outbound to or from points on this company's line in 1926. Approximately half of the movement was line haul, and the remainder was handled in switch movement.

Approximately 14,000 cross ties and 170 cedar trolley poles were renewed. More than 400 trolley poles were treated with hot creosote. All track bonding was rehabilitated and twelve passenger cars were overhauled and repainted. In this latter respect a

**INCOME AND SURPLUS ACCOUNT OF THE KANSAS CITY, CLAY COUNTY & ST. JOSEPH RAILWAY FOR YEAR ENDED DEC. 31, 1926**

INCOME ACCOUNT	
Gross Earnings from Operations:	
Revenue from transportation.....	\$815,34
Revenue from operations other than transportation.....	12,828
<b>Total gross earnings from operation....</b>	<b>\$828,176</b>
Operating Expenses and Taxes:	
Operations.....	\$439,472
Maintenance.....	159,547
Taxes.....	22,326
<b>Total operating expenses and taxes....</b>	<b>\$621,346</b>
Net earnings from operations before depreciation.....	\$206,829
Add non-operating income.....	\$15,489
<b>Total net earnings before depreciation.</b>	<b>\$222,318</b>
Interest deductions.....	\$157,358
<b>Surplus net income before depreciation</b>	<b>\$64,959</b>
SUMMARY OF SURPLUS ACCOUNT	
Balance, Jan. 1, 1926.....	\$807,937
Add:	
Surplus net income before depreciation.....	\$64,959
Less depreciation of rolling stock.....	17,395
<b>Net income after depreciation.....</b>	<b>\$47,563</b>
Refund of federal income tax for years 1917 to 1921.....	2,953
Discount on \$102,000 of first mortgage bonds purchased and canceled.....	51,527
<b>Total additions.....</b>	<b>\$102,044</b>
<b>Balance, Dec. 31, 1926, per balance sheet..</b>	<b>\$909,978</b>
Deduct:	
Portion of unamortized bond discount and expense written off.....	\$11,230
Premium on United States Treasury notes written off	1,218
Normal tax withheld at source.	2,086
Materials and supplies inventories adjusted.....	9,344
Advertising and purchasing expense on canceled bonds..	397
<b>Total deductions.....</b>	<b>\$24,277</b>
<b>Balance, Dec. 31, 1926, per balance sheet..</b>	<b>\$885,700</b>

vision. The Excelsior Springs Division, however, recovered some of the loss of passenger business which it has previously suffered from a similar cause, with the result that the total number of revenue passengers carried by the two divisions decreased only 2 per cent.

**Net in Duluth Lower**

**Under New Fare Passenger Revenues Increase in 1926—Improvement Noted in Bus Operation**

The net income of the Duluth-Superior Traction Company, Duluth, Minn., for the year ended Dec. 31, 1926, transferred to profit and loss showed a decrease of \$23,064 compared with the year previous. This disclosure was made in the annual report to the stockholders. The gross revenues for the year showed an increase of \$14,448, and operating expenses, including all taxes, showed an increase of \$38,799.

Previous to Oct. 15, 1926, at the 6-cent fare the passenger revenue showed a decrease of \$50,867 compared with the corresponding period during 1925. On Oct. 4, 1926, the Railroad and Warehouse Commission of Minne-

**TRACK MILEAGE AND PASSENGER EARNINGS PER MILE OF THE DULUTH-SUPERIOR TRACTION COMPANY**

(Street railway only)	
Total miles, single track.....	16.94
Total miles, double track.....	44.64
Total miles, special track.....	6.15
Total miles, all track reduced to single	112.36
Average total miles, all track reduced to single, operated during 1926.....	110.39
Total miles of street and right-of-way occupied by tracks, 1926.....	61.58
Average total miles of street and right-of-way occupied by tracks, operated during 1926.....	60.37
Revenue from transportation, per mile single track.....	\$16,604.37
Revenue from transportation, per mile street occupied by tracks.....	\$30,362.05
Revenue from transportation.....	\$1,832,956.77

ing expense at the rate of \$100,000 a year as provided in the order of the Railroad and Warehouse Commission of Minnesota dated Oct. 4, 1926.

A. M. Robertson, president, stated that the management hoped to have the charge for annual depreciation of the property in both Duluth, Minn., and Superior, Wis., fixed and accrued upon a percentage basis which would be uniform in both states instead of a percentage basis in one state and a flat annual amount in the other.

The amount accrued to depreciation reserve during the year 1926 was \$194,760. There was expended for renewals and charged against depreciation reserve the sum of \$48,402. There was expended for additions to property during the year the sum of \$116,801.

Bus service operated as feeders to railway lines has been fully justified, according to Mr. Robertson, and affords a means of supplying transporta-

**STATISTICAL STATEMENT OF THE DULUTH-SUPERIOR TRACTION COMPANY**

(Street railway only)		1926	1925
Total revenue.....	\$1,888,303	\$1,905,001	
Total operating expense including depreciation.....	1,508,472	1,494,898	
Net revenue.....	379,831	410,102	
Revenue passengers carried....	29,254,508	30,638,092	
Transfers redeemed.....	5,031,592	5,309,085	
Operating, per cent of revenue, taxes included.....	86.73	85.58	

**COMPARATIVE STATEMENT OF RAILWAY OPERATING REVENUES\***

1917.....	\$1,621,952
1918.....	1,665,909
1919.....	1,937,142
1920.....	1,919,579
1921.....	1,777,330
1922.....	1,784,774
1923.....	1,904,606
1924.....	1,789,402
1925.....	1,873,013
1926.....	1,849,463

\*Above comparative statement has been made to conform with the Interstate Commerce Commission's classification of accounts. Non-operating income not included.

sota filed its order fixing the value of the property of the company in the city of Duluth as of Dec. 31, 1925, at \$5,291,710 and the rate of return which the company was entitled to receive on such valuation was fixed at 7½ per cent. The rate of fare which was authorized in the city of Duluth was fixed at 8 cents cash, five tickets or tokens to be sold for 35 cents. The new rate of fare became effective on Oct. 15, 1926. From Oct. 15 to Dec. 31, 1926, under the new rate the passenger revenue shows an increase of \$25,342 when compared with the corresponding period in 1925.

Depreciation has been accrued and charged monthly to operating expense at the same rate as the previous years, with the exception of the property comprising the Duluth, Minn., Division for the months of October, November and December. During these months depreciation on the Duluth Division has been accrued and charged into operat-

**CONSOLIDATED INCOME STATEMENT OF THE DULUTH-SUPERIOR TRACTION COMPANY\***

	1926	1925
Operating revenues:		
Revenue from transportation.....	\$1,934,636	\$1,928,624
Revenue from other operations.....	16,506	14,868
<b>Total operating revenues....</b>	<b>\$1,951,142</b>	<b>\$1,943,493</b>
Operating expenses:		
Way and structures.....	\$213,616	\$209,908
Equipment.....	235,637	225,193
Power.....	176,183	178,704
Conducting transportation....	746,487	729,398
Traffic.....	1,526	2,521
General and miscellaneous....	260,065	243,109
Transportation for investment-credit.....	—11,384	—10,832
<b>Total operating expenses....</b>	<b>\$1,622,131</b>	<b>\$1,578,012</b>
<b>Net revenue from operations</b>	<b>\$329,011</b>	<b>\$365,480</b>
Taxes assignable to operations.....	\$133,974	\$139,294
<b>Operating income.....</b>	<b>\$195,036</b>	<b>\$226,186</b>
Non-operating income:		
Income from funded securities.....	\$22,284	\$15,169
Income from unfunded securities and accounts.....	2,425	2,456
Income from sinking fund and other reserves.....	14,091	13,980
Miscellaneous income.....	67	465
<b>Total non-operating income.</b>	<b>\$38,869</b>	<b>\$32,070</b>
<b>Gross income.....</b>	<b>\$233,906</b>	<b>\$258,256</b>
Deductions from gross income:		
Interest on funded debt.....	\$169,664	\$171,054
Interest on unfunded debt.....	2,740	2,736
Miscellaneous debits.....	704	604
<b>Total deductions from gross income.....</b>	<b>\$173,109</b>	<b>\$174,395</b>
<b>Net income transferred to profit and loss.....</b>	<b>\$60,796</b>	<b>\$83,861</b>

\*The above income statement includes the results from the operation of the street railway system and motor coaches.

siderable saving was effected by substituting a cellular lacquer in lieu of the former paint and varnish method.

The passenger train service furnished by the railroad was substantially the same as that during the past few years, except that on the St. Joseph Division four limited trains were operated, of which two displaced local trains.

The Kansas City, Clay County & St. Joseph Auto Transit Company, which operates bus lines connecting with the company's railroad lines, now has four separate routes, to wit: Kansas City to Excelsior Springs, Kansas City to St. Joseph, Kansas City to Parkville, and, since Dec. 9, 1926, a touring car line between Platte City and the company's railroad line at Ferrelview. Its gross revenues for the year were \$120,105. They covered operating expenses, taxes and reserve for depreciation, but provided no return on the capital investment. The details of the revenues of the Auto Transit Company were not included in the income account of the railway.

The company explains that the improvement of the highway between Kansas City and St. Joseph has resulted in a substantial increase in the use of the private automobile, and that as a consequence the railroad suffered from a reduction of 118,971, or 14.4 per cent, in the number of revenue passengers carried on the St. Joseph di-

tion service to sparsely settled districts which could not support a railway. The earnings from bus operation during the past year have not been satisfactory, but a steady improvement has been shown and the year 1927 should show still further improvement.

During the year one railway extension of 2.63 miles of track was built in Duluth. This extension is known as the Crosley Avenue line and was put in service on Oct. 1, 1926.

No general mortgage bonds were authenticated or sold during the year, while \$23,000, par value, of general mortgage bonds were retired under the sinking fund provision of the mortgage.

The report goes into some detail on the status of the appeal of the city of Duluth to the United States Supreme Court from the order and decision of the United States District Court and the appeal of the city of Duluth from the decision of the District Court of St. Louis County.

**Revenue at Youngstown Holds Up Well.**—The revenue of the Youngstown Municipal Railway, Youngstown, Ohio, during January was \$184,679, compared with \$185,393 for a similar month of 1926. During the first month of the year the revenue failed by \$10,762 of paying all expenses, including a return on the investment.

**Will Remove Tracks.**—The Pacific Electric Railway has been granted permission by the California Railroad Commission to abandon and remove the tracks on its San Antonio Heights Line in the county of San Bernardino.

**Files Abandonment Petition.**—The New York & Stamford Railway filed a petition on April 4 with the Public Service Commission asking for the approval of a declaration of abandonment of its railway lines in the village of Port Chester, Westchester County, on North Main Street from Mill Street to the state line between New York and Connecticut. A public hearing will be held on this petition. This is part of the plan for readjustment to which reference has been made before in the JOURNAL.

**May Reimburse Treasury.**—The Key System Transit Company, Oakland, Cal., has been authorized by the Railroad Commission, in a supplemental order, to use \$175,740 of the proceeds received from the sale of bonds heretofore authorized by the commission to reimburse its treasury.

**Revenue in San Diego \$1,667,519.**—The San Diego Electric Railway, San Diego, Cal., reports to the Railroad Commission its 1926 operating revenue at \$1,667,519, compared with \$1,608,501 for 1925. The operating expenses, excluding taxes for 1926, are reported at \$1,350,373, and at \$1,405,130 for 1925, leaving net operating revenue of \$317,146 for 1926 and \$203,371 for 1925. During 1926 taxes charged to operation amounted to \$113,828 and for 1925 to \$106,583. Deducting the taxes leaves operating income of \$203,318 for 1926 and \$96,788 for 1925. Adding to the operating income the non-operating income of the company and deducting non-collectible revenue and rents results in a gross corporate income,

which represents the amount available for interest, amortization of debt discount, other fixed charges, non-operating expenses, dividends and surplus, of \$303,888 for 1926 and \$175,822 for 1925.

**Net Income Lower.**—For the eight months period ended Feb. 28, 1927, the passenger revenue of the Brooklyn City Railroad, Brooklyn, N. Y., was \$7,518,803, against \$7,486,575 for a similar period last year. Operating expenses and taxes increased from \$6,394,466 for the eight months period ended Feb. 28, 1926, to \$6,542,038 for the 1927 period. After the consideration of income deductions a net corporate income remained this year of \$766,626, against \$930,680 in the eight months period ended Feb. 28, 1926.

**Service Discontinued.**—The Sacramento Northern Railway has been granted permission by the California Railroad Commission to discontinue passenger service over its Suisun-Vacaville branch in the county of Solano. The commission found that the service was not required by public convenience and necessity.

**Abandonment Petition Dismissed.**—Application of the Utah-Idaho Central Railroad for permission to abandon its passenger service between Ogden and Plain City, Utah, has been dismissed without prejudice by the Utah Public Utilities Commission.

**Rail Lines at Tampico to Discontinue.**—All of the railway lines of the Tampico Electric Company, Tampico, Mexico, except the one which runs from Tampico to the beach resort suburb of Miramar, were shut down on March 14. Whether or not the suspension will be permanent will depend on future conditions. Should there be no indications of improvement in patronage, the tracks will be taken up and the rails along with other equipment sold, it was stated. The Tampico Electric Company is owned by British interests.

**New Directors Elected.**—Harold J. Gallagher, New York, and W. Graham Boyce, vice-president of the Union Trust Company, were elected directors of the Washington, Baltimore & Annapolis Electric Railroad, Baltimore, Md., at the recent annual meeting. They succeeded J. H. Beatson and R. W. Graham, Baltimore.

**Cable Road Reports.**—The California Street Cable Railroad, operating in San Francisco, reports to the Railroad Commission its 1926 operating revenue at \$532,537, compared with \$557,858 for 1925. The operating expenses, excluding taxes for 1926, are reported at \$462,344, and at \$412,082 for 1925, leaving net operating revenue of \$70,193 for 1926 and \$145,776 for 1925. During 1926 taxes charged to operation amounted to \$49,858, and for 1925 to \$49,405. Deducting the taxes leaves operating income of \$20,334 for 1926 and \$96,370 for 1925. Adding to the operating income the non-operating income of the company and deducting non-collectible revenue and rents results in a gross corporate income, which represents the amount available for interest, amortization of debt discount, other fixed charges, non-operating expenses, dividends and surplus, of \$41,869 for 1926 and \$117,624 for 1925.

**Net Income Up in St. Paul.**—Total operating revenue of the St. Paul City Railway, St. Paul, Minn., for February was \$391,008 compared with the January income of \$428,574 and a total revenue of \$402,566 for February, 1926. The operating expenses were \$280,881, compared with \$299,216 for the similar period a year ago. Operating expenses for February, 1927, were cut nearly \$19,000 below similar expenses in February, 1926. Because of the sharp reduction in operating costs, the net income of the company for February, however, showed an increase of approximately \$7,500 over the income of the corresponding month a year ago, despite a drop of \$11,500 in total operating revenue. Net income for February was \$24,575, after all deductions for taxes, operating expenses and miscellaneous debits had been made.

**Would Dispose of Property.**—The Pacific Electric Railway has applied to the California Railroad Commission for permission to sell its resort property in the city of Redondo Beach, Los Angeles County, valued at \$1,800,000, to T. R. Gardner for a corporation to be chartered for the purpose of taking over and operating the property and designated as the Amusement Company. The Pacific Electric Railway has also requested permission of the Railroad Commission to dispose of certain real estate located along its Newport Beach Line in the city of Long Beach and in the city of Seal Beach, valued at \$126,000.

**Slight Earnings Decrease on Indiana Road.**—The net income of the Terre Haute, Indianapolis & Eastern Traction Company for 1926 shows a decrease of \$14,988 under the net income for 1925, according to a financial statement of the company filed with the Indiana Public Service Commission. The net income for 1926 was \$137,929. Operating revenue was \$3,155,296. Operating expenses were \$3,129,919. The gross income was \$1,185,513. The report shows, among deductions, \$676,897 interest on the funded debt and \$55,847 interest on unfunded debt. The total valuation of the property is \$18,200,000.

**Offers New Prior Lien Issue.**—The first public offering of 6 per cent cumulative prior lien stock of the Midland Utilities Company, Chicago, Ill., was made March 24. The Midland Utilities controls the Chicago, South Shore & South Bend, the Gary Railways and Indiana Service Corporation. A new issue of 25,000 shares of this stock has been authorized and 15,000 shares is being offered to investors by the Utility Securities Company, Chicago, and the Central States Securities Corporation, New York. The additional 10,000 shares, which will be offered in the near future, take the place of 10,000 shares of 7 per cent prior lien stock which was repurchased and converted into 6 per cent stock. The stock is being sold at \$92.50, to yield about 6.50 per cent. Dividends on other prior lien and preferred stocks are payable at the rate of 7 per cent annually. The new 6 per cent prior lien stock is on a parity in all respects with the 7 per cent prior lien stock except as to the annual dividend rate and the callable price, which is \$110 per share.



## Book Reviews

### Profit Sharing and Stock Ownership for Employees

By Gorton James, Henry S. Dennison, Edwin F. Gay, Henry P. Kendall and Arthur W. Burritt. New York: Harper & Brothers. 394 pages. Price \$4.

Profit motive is a strong force. As the authors point out, it may well be utilized in some one of its manifold forms as an agent of efficient management and of social betterment. The point of the present volume, however, is not only that it can and should be so used, but that its application demands an understanding of its principles and an analysis of the situation it is meant to fill.

Within these pages is a study of principles. There are no recommendations of ready-made plans, since, as the authors say, no plan is uniformly applicable to all situations. The hope of the authors is merely that the book will help managements to find the points of usefulness of profit sharing as well as to recognize the places in which it is not effective.

The present volume really is the successor to "Profit Sharing, Its Principles and Practice," published in 1918. That book has, in the present volume, been entirely rewritten, for since its publication there has been a steady and continued interest in the subject, while at the same time the business world has gone through changing conditions which have tested the various plans and revealed in many ways their points of weakness and strength. Moreover, there has recently been a wide use of employee stock participation to serve equivalent purposes if not identical ones.

The authors say that the principal conclusions of the former volume as to the great strength of the profit motive, when effectively applied, have been sustained and strengthened by the facts of experience, but that there has been some modification of previous conclusions regarding specific applications of the principles. Especially has it been proved that profit sharing and management sharing are very closely interdependent, and this fact has led to the addition of several chapters to the present edition. Furthermore, the use of stock participation has been studied, in so far as it has been used in place of profit sharing, or for the same purposes, and this subject has formed the basis for three additional chapters. The volume is wide in its appeal to railway executives.

### What a Business Executive Should Know About Patents

By Roger Sherman Hoar, head of the patent department of the Bucyrus Company. New York, N. Y.: Ronald Press Company, 1926. 22 pages, bound in paper. 6x9 in. Price \$4.50.

All things considered, the author has achieved well his object to prepare a treatise on tactics plus a translation into plain English of so much of the patent law as will enable a business executive to understand his attorney

and to co-operate fully with him. This is said even with the fact in mind that the "business executive" is the one in charge of a manufacturing business and not the head of a transportation business.

With this end in mind the emphasis of the author is placed on patent applications, interferences and searches and on the contractual arrangement desirable in case of licenses. Considerable attention is paid to the problems of the inventor, the employer and employees, the right to repair patented machines and to the shop rights that may be developed when an employee has invented something that may be built outside. The chapters on infringements and on the choice of an attorney discuss many practical matters not usually put down on paper, but still of importance to any one interested in the patent question. In conclusion, the author summarizes a number of misconceptions about the whole matter far too prevalent even among those who are not without experience in dealing with patent problems.

### Street Railway Transportation in Cincinnati

By Rebecca Van Hamm. Vocational Pamphlet of the Cincinnati Public Schools, No. 6. 64 pages.

Did you ever want to be a motorman when you were a boy? "Street Railway Transportation in Cincinnati" opens up new vistas of thought for the high school boy of today in choosing a life work, and it goes into the fields of mechanical, electrical and civil engineering. In fact, the story of railway transportation in Cincinnati is the sixth of a series of vocational studies for junior high school boys and girls, presented in pamphlet form and published by the Board of Education of Cincinnati, and the first of the public utilities in this series to be discussed. It develops all of the allied vocations in every line connected with the electric railway industry. Its author, Miss Rebecca Van Hamm, has brought together two great civic bodies, the Cincinnati Street Railway and the Board of Education.

She has shown the student his relation to the community through the very car on which he rides to and from school. How many more advantages he has today than his father yesterday are told in the introductory chapter. Health and safety of the workers whom he meets every day, the various organizations with which they are connected, how they are at work in constructing lines, their duties in the carhouses, shops and power stations; how they are instructed before they are allowed to go out on their new jobs; how they spend their moments of recreation in the shelter rooms; how their wages are determined; how many passengers ride on the cars every day, and statistics of the transportation department's functioning are all woven

into this brief text and portrayed by pictures and charts.

In the glimpse into the future, the author asks the question, "How shall we come to town, or ride to school 25 years from today?" The student will be better prepared to think along these lines after reading some of the books and magazines appended to the text in the bibliography.

### Switching Equipment for Power Control

By Stephen Q. Hayes, A.B., E.E., general engineer Westinghouse Electric & Manufacturing Company. Second edition. New York, N. Y.: McGraw-Hill Book Company, Inc. 556 pages. Price \$5.

Progress in the design of generators, transformers and other electric machinery since the first edition of this book has made it desirable to bring the contents abreast of present practice. A number of European ideas have also been incorporated in the revision.

In America there has been a great development of the steel-clad switchgear, represented by truck panels, truck type oil circuit breakers, steel switchhouses for outdoor service and steel switchboards. In the second edition of this book a separate chapter has been devoted to these advances. A separate chapter has also been allotted to automatic substations so as to take care of the advances made in automatic railway substations, also automatic stations for d.c. light and power, substations for mining service, automatic hydro stations and similar automatic equipment. There is a discussion of supervisory control and a certain amount of information for load dispatching. The tying together of neighboring power systems has introduced many interesting problems connected with voltage adjustment and regulation by means of induction regulators, step induction regulators and ratio adjusters or tap changers to permit change of transformer ratio under load. A chapter is devoted to this subject.

The author describes the switching apparatus approximately in the order in which the various devices were developed and then proceeds to the consideration of the main connections desired in a power plant and the means of carrying them out so as to obtain the maximum amount of security and flexibility with minimum outlay. Switchboard panels, control desks, etc., are considered next with the location of breakers, bus structures, etc. Description of apparatus has been confined almost exclusively to present-day standards.

### Employment Statistics for the United States

By Ralph C. Hurlin of Russell Sage Foundation and William A. Berridge of Brown University. 215 pages. Price, \$2.50.

This is a plan for a national collection of statistics and a handbook of methods recommended by the committee on governmental labor statistics of the American Statistical Association. It presents the consensus of opinion of the members of that committee concerning problems involved in the collection and publication of adequate employment statistics for the United States.

## Personal Items

### Stone & Webster Confer Honor

In Promotion of Messrs. Clifford, Burke, Townsend, Wentworth,  
Management Recognizes Long Service Records—Careers  
of New Incumbents Reviewed

SINCE April 1 the Boston office of Stone & Webster, Inc., has been enriched by the services of George H. Clifford, who was recently appointed division manager in charge of the companies located in the Southwestern district, the Virginia Electric & Power Company and subsidiaries and the northern district properties of the Eastern Texas Electric Company. This change, along with several others, was referred to in the ELECTRIC RAILWAY

Walter H. Burke, the new district manager in the Southwestern district, was appointed less than two years ago manager of the Northern Texas Traction Company of Fort Worth and the Tarrant County Traction Company. He went to Fort Worth at that time from the Houghton County Traction Company as successor to Mr. Clifford. Mr. Burke, too, has been identified with the Stone & Webster organization for many years. He entered the statistical



W. H. Burke



G. H. Clifford



A. S. Townsend

JOURNAL, issue of March 5, 1927, page 438.

Mr. Clifford brings to his new position a record of valuable experiences, gained mostly on the Stone & Webster properties. About 26 years ago he entered the service of the Northern Texas Traction Company as secretary to F. M. Haines, general manager of the company, owned by the Bishop & Sherwin syndicate of Cleveland. Two years later Mr. Clifford was made secretary and treasurer. He held this position until 1905, when the property was purchased by Stone & Webster. After the change in ownership he was made general superintendent and in 1910 was elected vice-president and general manager of the Northern Texas Traction Company and in addition general manager of the Fort Worth Southern Traction Company, operating 32 miles of interurban line between Fort Worth and Cleburne. A little less than two years ago Mr. Clifford was made Southwestern district manager over all Stone & Webster properties in Texas, Louisiana and New Mexico. The properties involved embraced companies with many diversified interests, but his talents proved equal to the responsibilities imposed upon him. Mr. Clifford was born at Fort Worth in 1881. He was graduated from the public schools and attended Weatherford College.

department at the Boston office in 1910, remaining there for a year.

In 1911 he was sent to Dallas as clerk to E. T. Moore, then manager of the Dallas group of utilities under Stone & Webster management. Later he left Stone & Webster to go to Milwaukee and assumed the position of manager of the light and power operations of the Milwaukee Electric Railway & Light Company. However, in 1915 he was back again in the Boston office of Stone & Webster as assistant to M. M. Phinney, who was vice-president of the Stone & Webster Management Association. His next move was to Keokuk, Iowa, where he served as manager of the Keokuk Electric Company. From there he went to the Houghton County Traction and the Houghton County Electric Light Company. Mr. Burke was born in Maine. He was educated at the University of Maine, where he took an electrical engineering course. He was graduated in 1906. Following his graduation he spent about two years with various companies in New York and Pennsylvania on power house and substation operation and maintenance.

Alfred S. Townsend, formerly manager of the Florida Motor Lines, Inc., and its affiliated companies and vice-president of the Florida Motor Lines, Inc., is now manager of the Northern

Texas Traction Company and the Tarrant County Traction Company. He has been associated with Stone & Webster for the past 26 years and during that time has been identified with the utilities at Lowell, Mass.; Ponce, Porto Rico, and Sydney, Nova Scotia. In 1916 he was appointed manager of the properties at Beaumont and Port Arthur, included in the Eastern Texas Electric Company.

Mr. Townsend began his career in the electrical industry with the Lewiston & Auburn Electric Light Company, filling various positions with the company until he was made general superintendent in 1898, serving in that capacity for about two years. In 1925 Mr. Townsend was appointed vice-president and general manager of the operating subsidiary company of the Western United Corporation with headquarters at Aurora, Ill. These subsidiary companies had previously signed contracts with Stone & Webster for executive management service. To Mr. Townsend will fall the task of preserving the reputation of the progressive company at Fort Worth. The company a few years ago won the Coffin medal and has aspiration for that distinction again this year. Recently the management instituted a cash fare of 10 cents and a ticket fare of 40 cents a week plus 5 cents per ride. The officials believe that the new rate schedule will help not only to build volume but will really solve the fare problem for the infrequent rider, the casual rider and the wholesale rider.

Philip M. Wentworth, who will replace Alfred F. Townsend as manager of the Florida Motor Lines, Inc., and its affiliated companies, was formerly manager of the Truckee River Power Company, Reno, Nev. Later he served as manager of the Fort Madison Company in Fort Madison, Iowa, and also manager of the Dallas City, Ill., Light Company. He succeeded Walter M. Bird in 1924 as manager of the Keokuk company.

### C. A. Semrad Succeeds S. B. Ireland at St. Joseph

Charles A. Semrad, vice-president and commercial manager of the Public Service Company of Colorado, Denver, has been made vice-president and general manager of the St. Joseph Railway, Light, Heat & Power Company, St. Joseph, Mo. He succeeds S. B. Ireland, recently appointed Western manager of the securities department of Henry L. Doherty & Company.

Mr. Semrad became associated with the Boulder office of the Northern Colorado Power Company in 1912. A year previous to that he had assumed management of the Cheyenne Light, Fuel & Power Company, Cheyenne, Wyo., a subsidiary of the Northern Colorado Power Company, and later became manager of the Western Light & Power Company's properties, with headquarters at Boulder. Six years later Mr. Semrad was transferred to Denver to assume the duties of vice-president and commercial manager, which position he has held until his recent promotion. He is a graduate of the University of Wisconsin, class of 1907.

### Promotions in Charlotte

A. B. Skelding, manager of the branch of the Southern Public Utilities Company at Charlotte, N. C., resigned, effective on April 1. His successor is Harry A. Orr, who has been manager of the Anderson branch since that city has been included in the Southern Public Utilities System. Coincident with the announcement of Mr. Orr's succession to the managership of the Charlotte branch, E. C. Marshall, president of the company, announced the appointment of T. F. Hill to succeed Mr. Orr at Anderson.

The former manager at Charlotte has interested himself in the formation of the Piedmont Wood Preserving Company, a new \$100,000 corporation, being organized to establish a wood preserving plant near Charlotte. He will be president and treasurer of the new enterprise. At one time he organized and operated a wood preservation plant as a department of the Tidewater Power Company at Wilmington. Mr. Skelding has been manager of the Charlotte branch of the company for the past six years.

Harry A. Orr, his successor, has been engaged in utilities work since his college days. He was graduated from the Alabama Polytechnic Institute at Albany, Ala., where he specialized in electrical engineering. Following his graduation he spent two years in the engineering department of the General Electric Company at Pittsfield. When the Anderson Water, Light & Power Company was purchased by the Southern Utilities Company and became a branch of that system Mr. Orr was made manager of the Anderson branch of this company. This position he has filled since the transfer was made in 1912.

Thomas F. Hill, who succeeds Mr. Orr at Anderson, has also spent practically all of his time since his graduation from Wofford College with the utilities in Anderson. He joined the old Anderson Traction Company in 1909 and became its superintendent in 1914.

### Engineering Firm Established

William H. Baker and C. G. Spencer announces the organization of the firm of Baker & Spencer, Inc., for the general practice of engineering and construction at 117 Liberty Street, New York City, N. Y.

Mr. Baker has had broad experience in investigating, financing, organizing and managing industrial businesses following an extensive engineering training. He was graduated from Cornell in 1901 and spent six years in diversified design and construction. He acted for ten years in managerial capacities for the Atlas Portland Cement Company, two years as vice-president and general manager of the Hardinge Company, three years as president of the Quigley Fuel Systems, Inc., two years as president of the Acme Cement Corporation and one year, until his resignation to organize this firm, as vice-president of the North American Cement Corporation.

Mr. Spencer, since his graduation from Cornell in 1904, has been engaged in the design, construction and

operation of projects, including power plants for industrials and public utilities, railway electrification, passenger stations and repair shops, war construction, industrial plants for foundry and machine shops, leather tanning, copper wire and cable, paper making and cement manufacture during nine years with Westinghouse, Church, Kerr & Company, three years with the Toronto Power Company, two years with the Chile Exploration Company in South America, two years in the United States Army, two years with the American Sugar Refining Company and five years with McClellan & Junkersfeld, Inc., New York.

### McGraw-Hill Editor Will Report Geneva Conference

In order to give American industrialists and engineers first-hand information on the deliberations and conclusions of the international Economic Conference at Geneva, the McGraw-Hill Publishing Company, Inc., publisher of the *ELECTRIC RAILWAY JOURNAL*, is sending Edward J. Mehren, one of its vice-presidents, to the meeting. He will sail on the same ship with the American delegates and experts on April 20.

Mr. Mehren has a broad knowledge of American industry and engineering. Joining the staff of *Engineering Record* more than twenty years ago, he became in turn editor of *Engineering Record*, editor of *Engineering News-Record* and vice-president and chairman of the editorial board of the McGraw-Hill Publishing Company, Inc. In his editorial travels he has covered engineering and industrial developments in every part of the United States, in eastern Canada and in the leading countries of western Europe.

In addition to his experience gained through his editorial and publishing work, Mr. Mehren was at one time manager of the Emerson Company, thus securing an intimate insight into management technique. He was one of the organizers of the National Association of Corporation Schools and of the wartime Highway Industries Association. He has been a director of the New York Building Congress and is a director of the American Arbitration Association and chairman of the arbitration committee of the American Society of Civil Engineers.

Mr. Mehren's ability as a public speaker makes him much in demand for meetings of industrial and engineering associations and societies.

### Grandville Officers Elected

At a recent directors' meeting of the newly organized United Suburban Railway, Grandville, Mich., F. F. McCarrick, Grandville, was elected president of the railroad. Other officers elected by the board were Paul E. Gezon, Wyoming Park, vice-president, and Harold T. Slaght, Grandville, secretary and treasurer.

This company is the successor to the defunct Grand Rapids, Holland & Chicago Interurban line between Grand Rapids and Jenison. Mention of this project has been made previously.

### Changes in Detroit Municipal Personnel

John A. Mulqueen has resigned as supervisor of employment of the Department of Street Railways of the City of Detroit, Mich. William S. Ready, who has been in charge of the instruction of new men in the department, has been named by General Manager Del A. Smith as temporary successor to Mr. Mulqueen.

Frank J. Denny has resigned as assistant general manager and director of publicity for the Department of Street Railways. Mr. Denny, a former newspaper man, entered the railway organization about twenty months ago as assistant to Col. H. U. Wallace, former general manager.

The appointment of Fred A. Nolan, former assistant auditor, has been announced by the street railway department to fill the position of assistant general manager made vacant by Mr. Denny's resignation.

## Obituary

### Jilson J. Coleman

Scarcely five months since his friends honored him with the presidency of the Pennsylvania Street Railway Association, they escorted the body of Jilson J. Coleman, vice-president and general manager of the Scranton Railway, Scranton, Pa., to his final resting place in Louisville, Ky. There, beside the scenes of his early boyhood, were interred the remains of one of the oldest executives in point of service among electric railway operators in the United States.

Something of the appreciation felt for Mr. Coleman was noted in the spring of last year when he was promoted to the position of operating vice-president by A. E. Fitkin, who, under the General Engineering & Management Corporation, purchased the Scranton Railway. Mr. Coleman at that time was retained to continue his duties as general manager. During the past six months, however, since Mr. Coleman's gradual decline in health, he devoted much of his time to legislative matters of the company, leaving a great deal of the daily operation of the concern in the hands of Operating Manager Harry Dartt. When Day & Zimmermann of Philadelphia secured the controlling interest in the railway from A. E. Fitkin, Mr. Coleman received a telegram in which it was stated that no changes would be made in the operating personnel of the company.

Mr. Coleman started on his railway career in Louisville, Ky., in 1882 as a clerk for the Central Passenger Railway. He worked his way up to the position of chief clerk, and then managed the lines in New Albany, Ind. Later he moved to Cleveland and assisted Tom L. Johnson in electrifying the horse car lines there. After the work was completed Mr. Coleman helped to build the line from Allentown to South Bethlehem, and from Allentown to Catasaqua. The company at Allentown purchased the line from Allentown to Bethlehem and consoli-

dated the two companies. Mr. Coleman was engaged in the work of rehabilitating the Yonkers systems and later started the Nassau Electric Railroad, Brooklyn, N. Y., now included in the Brooklyn-Manhattan Transit System. He managed the consolidation of the St. Louis and Washington systems for Brown Brothers, New York bankers, and built the line of the New Jersey & Pennsylvania Traction Company between Trenton and Princeton.

The late Scrantonian, who was 69 years old, was well known for his work in connection with the Shipping Board, Emergency Fleet Corporation, under A. Merritt Taylor, former transit commissioner of Philadelphia. In this capacity he saw that ample transportation was provided for the shipbuilders between Boston, Mass., and Houston, Tex.

In 1920 Mr. Coleman became general manager of the Scranton Railway. During the seven years of his régime on that property many improvements and changes have been brought about. The rolling stock has been greatly increased and more than \$250,000 has been spent for the purchase of the latest type cars during the past eighteen months. Improved schedules have resulted on practically all of the carlines, and many miles of new track and roadbed have been laid.

### Major S. L. Nelson

Major Samuel L. Nelson, pioneer utility magnate in the Middle West and distinguished in the World War, died on March 30 in the Pastime U. S. Veterans' hospital at Tucson, Ariz. He began his career as a waterboy with the Baltimore & Ohio Railroad and became train dispatcher, going to Illinois as a manager for the Western Union Telegraph Company. In 1886, when the late W. B. McKinley was laying the foundation of the great utility enterprises he formed, Major Nelson became associated with him, having a large part in the development of the railway and water works in Champaign, Ill. Later he was active in other McKinley utilities. He served in various executive capacities, including the presidency of several of the McKinley enterprises, and later helped to rebuild the railway at Wichita, Kan. Major Nelson went to Peoria eighteen years ago to take charge of the electric railway system and engaged in other financial and industrial activities there. At the age of 58 he enlisted at the same time as his son and served 39 months in the World War. He was 68 years old.

Rudolph Henry Peppmuller, for 21 years with the New York Rapid Transit Commission, now the Board of Transportation, died on April 4. In 1906 Mr. Peppmuller joined the staff of the Board of Rapid Transit Railroad Commissioners of New York City as an assistant architect and was assigned to design the stations for the first subway. Since then he had specialized in that branch of rapid transit construction and he drew the specifications for the contracts for the construction of the subway stations. Mr. Peppmuller was born in Staten Island 53 years ago. He studied at the Stapleton, S. I., Academy; Columbia University; Beaux Arts, Paris, and Rome.

## Manufactures and the Markets

News of and for Manufacturers—Market and Trade Conditions  
A Department Open to Railways and Manufacturers  
for Discussion of Manufacturing and Sales Matters

### International Economic Conference to Meet

To determine the economic difficulties which prevent the revival of general prosperity, principally in Europe, and to ascertain the best methods of overcoming these difficulties are the purposes of the International Economic Conference which will be convened at Geneva on May 4, under the general auspices of the League of Nations. Five delegates have been appointed by President Coolidge they will be accompanied by experts selected from government departments. Non-member nations as well as member nations have been asked by the league to send delegates. The acts of the delegates are not binding on their respective governments.

For more than a year a committee of 35 persons, drawn from 21 countries, has been working on the agenda and upon the data to be laid before the delegates. The topics fall under four heads. The first revolves about two main inquiries: An analysis of economic causes of the present disturbed equilibrium in commerce and industry, and a study of the economic tendencies capable of affecting the peace of the world.

Commerce questions, such as tariffs, import and export prohibitions and restrictions, monopolization and limitation of trade, dumping legislation and subsidies form the second group of studies. A particular inquiry into this group relates to the repercussion upon international commerce of reduced purchasing power.

Industrial problems come next and include study and discussion of:

1. The situation of principal industries, relating to productive capacity, output, consumption and employment.
2. Industrial, commercial and monetary causes of present difficulties of industry.
3. International industrial agreements as they affect producers, consumer and labor.
4. Production statistics.

Documents have been prepared, under the industrial classification, on coal, iron and steel, shipbuilding, the chemical industry, the electrical industry, legislation on cartels and combines, industrial management and standardization, technical and scientific progress and research, and on technical education and recruitment of technical staff.

Agriculture and its difficulties close the agenda.

In the preparation of the data for the delegates, the preparatory committee was assisted by the International Labor Office, the International Institute of Agriculture and the International Chamber of Commerce.

It is expected that topics that cannot be adequately traversed during the conference session will be referred to subcommittees for further study and report.

A characteristic of the conference is to be the breadth of its composition, the

participating governments having been specifically asked to name delegates whose experience qualifies them as experts in the subjects to be discussed. In the preparatory committee, considered indicative of the composition of the conference itself, were economists, producers, merchants, financiers and representatives of labor and of consumers. The preparatory committee considers this broad representation an assurance that the conclusions will be free from the bias incident to conferences of special groups. Included in the committee were such men as Georges Theunis, Belgium; Sir Arthur Balfour, England; Ernesto Belloni, manufacturer, Milan, Italy; W. T. Layton, editor of the *Economist*, London, and Prof. Allyn Young of Harvard University.

### Begin to Plan for Cleveland Now!

Diagrams of space layout for the convention of the American Electric Railway Association at Cleveland, Ohio, next October and applications for space will go out on May 16 this year instead of June 1, as has been the practice in the past.

It will be recalled that the exhibit committee voted at Cleveland on March 18 to accord all prospective exhibitors 30 days in which to file space requests. All applications received up to the close of business June 15 will receive the consideration of the exhibit committee when it meets on June 22 to make the official space assignment. Applications received after June 15 will be awarded space by the director of exhibits in the order in which they are received.

The suggestion is made that intending exhibitors plan their exhibit for the Cleveland convention now and be ready to file space requests promptly upon receipt of application blanks.

### Twin City Officers in Motors Corporation

T. J. McGill of the Twin City Rapid Transit Company and H. L. Bollum of the Twin City Motor Bus Company, a subsidiary of the Twin City Rapid Transit Company, Minneapolis, Minn., are members of the board of directors of the newly formed C. H. Will Motors Corporation, which will manufacture trucks and buses. To start the company has orders from two companies for 40 buses.

The Will corporation has bought the business and assets of Wilcox Trux, Inc., a long established manufacturer of motor cars, trucks and buses, lately manufacturing only trucks and buses. The Wilcox factory will be operated until May 1, when a building at 1030 Ramsey Street, Northeast, containing 50,000 sq. ft. of space, will be occupied, with option for purchase. The first year 200 men will be employed on a

production plan of more than \$2,000,000. Other directors are Paul Tibbetts, G. W. Traer, Edwin White, St. Paul, and R. F. Pack of the Northern States Power Company. Officers will be: C. H. Will, president; O. S. Caesar, vice-president; J. H. Colman, secretary.

**Two New Westinghouse Electric Locomotives for South Shore Line**

Orders for two standard 53-ton electric locomotives were placed on April 4 with the Westinghouse Electric & Manufacturing Company by the Chicago, South Shore & South Bend Railroad. The new locomotives will be of the type known as B-1. They will cost approximately \$70,000.

the locomotives, the South Shore Line has sent to the Pittsburgh manufacturer a consignment of electrical apparatus suitable for 1,500-volt direct-current operation. It is understood that the Westinghouse plant has on hand two new 750-volt electric locomotives which can readily be equipped for operation on the higher voltage of the South Shore Line.

The new locomotives will be used in switching service and for miscellaneous hauling and will increase the company's freight motive power units to six. At present four 80-ton engines are being operated in regular freight service. Increased freight business, and prospects of even greater growth during the summer, is the reason for the purchase of the additional locomotives, according to Charles H. Jones, general manager.

roding grades of lead are quoted at \$2 to \$3 per ton above common. Spot supplies of tin continue scarce, and spot Straits has lately held close to 70 cents—in fact, reaching that level on Monday. July is about 3 cents less, and April about 3 cent under spot.

**Virtues of Timken-Detroit Vehicle Brought to Possible Users' Doors**

The new, specially built "Timken-Detroit" de luxe motor coach of the Timken-Detroit Axle Company is starting an itinerary that will include most of the states of the Union. It is the intention to bring to the users' doors the virtues of Timken axles and the most efficient way of caring for those in service.

The educational motor coach is complete in itself. It contains luxurious, leather-upholstered, individual chairs for twenty passengers, and in an emergency temporary seats are available for an additional twenty persons. An ice chest is provided to care for food, and large tanks are provided for drinking water. A special silver screen, which disappears into the ceiling, is provided to receive a motion picture projected from the desk in the rear of the coach. This enables an audience of forty persons, all seated comfortably in the coach, to witness the story of how Timken axles are built and serviced. In a corner of the desk at the rear of the coach a small worm-drive unit is concealed.

The interior of the coach is of natural finished mahogany. Seats are of blue leather. Protected electric fans and Pullman type ventilators are installed in the ceiling. A glass transom gives light in the daytime, and makes adequate fresh air available at all times—no matter how crowded the coach may be. The exterior is blue, trimmed in cream. Tastefully colored shades and awnings protect the passengers from the sunlight. Frosted shaded lamps make it possible to read at night without eyestrain. In fact, the coach is considered the final word in luxury possible in modern construction.

The axles are Timken, of course, and equipped with four-wheel, air-operated, metal shoe brakes providing the maximum in safety, ease of operation and brake-lining life. The powerful six-cylinder motor makes possible a speed of 60 m.p.h., although the maximum speed permitted by those in charge of the coach is 35 m.p.h., in rural districts.

**Metal Markets Dull; Prices Lower**

DOMESTIC markets for the major non-ferrous metals were dull during the week ended April 6. Even zinc and lead, which had been moderately active in recent weeks, were very quiet. Although some sellers are asking 13.125 cents in the East for copper, this price has been shaded on small sales the last two days. On Monday the New York price for lead was cut from 7.35 cents to 7.25 cents, and the prevailing figure in St. Louis is now 7 cents. Zinc fluctuated within narrow limits during the week, but was a shade easier on April 6 than the Wednesday previous. Tin has been firm in spite of a small volume of business on the part of consumers. Buying on account of both India and China has had the effect of strengthening silver quotations, a net advance of one cent to 57½ cents being recorded for the week. Platinum and palladium are quiet and weak, with lower prices prevailing in the outside market, although the "official" price of platinum has not been changed. In spite of the Chinese situation, antimony has weakened, owing to the lack of interest on the part of buyers.

Another week, making five weeks in all, has gone by with an exceedingly slim volume of sales in the copper market. The entire tonnage sold during the last five weeks is little more than half that which changed hands in the

single record-breaking week of February. Sellers are convinced that a large volume of buying must be piling up and that when the ice is broken business will be brisk. On March 30 most sellers were asking 13½ cents delivered, but on Friday one large producer cut its price to 13.125 cents and on April 4 most of the others joined the procession. April 5 one interest that was anxious to sell a limited tonnage cut to 13 cents in order to do business. Of two transactions on April 6 one was at 13 cents and the other at 13.05 cents.

Although buying has been exceedingly limited, prices for zinc have eased only slightly. Galvanizers are reluctant buyers and in some instances have asked that April shipments be deferred. However, it is generally agreed that smelter production will show a material decline. High grade continues dull at 8½ cents delivery in the New York district.

On April 4 the American Smelting & Refining Company again reduced its contract price for New York lead, dropping from 7.35 to 7.25 cents. The reduction followed several very quiet days in a market which has been disappointing for several weeks. In the Middle West, as in the East, the market has been dull. The leading producers booked most of their business at 7.05 to 7.075 cents, St. Louis, until the A. S. & R. reduction on April 4, since which time an even 7 cents has ruled. Resale lots have sold at 6.975 cents, but offerings of this character seem now to be pretty well cleaned up. Cor-

**METAL, COAL AND MATERIAL PRICES  
F. O. B. REFINING**

Metals—New York		April 5, 1927
Copper, electrolytic, cents per lb.	12.83	
Copper wire, cents per lb.	15.25	
Lead, cents per lb.	7.25	
Zinc, cents per lb.	6.88	
Tin, Straits, cents per lb.	69.625	
Bituminous Coal, f.o.b. Mines		
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons.	\$4.975	
Somerset mine run, Boston, net tons.	1.975	
Pittsburgh mine run, Pittsburgh, net tons.	2.05	
Franklin, Ill., screenings, Chicago, net tons	2.25	
Central, Ill., screenings, Chicago, net tons.	1.875	
Kansas screenings, Kansas City, net tons.	2.50	
Materials		
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	\$5.50	
Weatherproof wire base, N. Y., cents per lb.	16.75	
Cement, Chicago net prices, without bags.	2.05	
Linseed oil (5-bbl. lots), N. Y., cents per lb.	10.90	
White lead in oil (100-lb. keg), N. Y., cents per lb.	14.50	
Turpentine (bbl. lots), N. Y., per gal.	\$0.74	



New Timken-Detroit vehicle on country-wide tour

## 100 New Cars Likely for Detroit

Despite the defeat of the paving amendment, mentioned elsewhere in this issue, the Detroit Street Railway Commission, Detroit, Mich., will request the City Council for permission to purchase 100 new street cars to be constructed within the next year. It is estimated by Del A. Smith, general manager, that the new cars, of the Peter Witt type, can be constructed at a cost of \$10,000 each or a total expenditure of \$1,000,000. The original intention was to finance the new cars out of the savings of \$700,000 a year which it was estimated would accrue to the system by relieving it of the paving charges.

## Specifications Announced for 201 Philadelphia Buses

Announcement has been made of the details of the 201 new gas-electric buses for the Philadelphia Rural Transit Company, Philadelphia, Pa., bus operating subsidiary of the Philadelphia Rapid Transit Company, delivery of which is expected to begin about May 1. The principal specifications of the equipment follow:

Builder of chassis	Yellow Truck & Coach Manufacturing Company
Model	P. R. T. model "Z"
Builder of body	Yellow Truck & Coach Manufacturing Company
Seating capacity	Single-deck 33, double-deck 67, de luxe 27
Weight (total)	14,250 lb.
Length over all	29 ft.
Wheelbase	230 in.
Roofing material and headlining	Deck canvas and 1/4-in. Haskellite
Brakes	Mechanical hand and foot
Buzzers	Electric Service Supplies Company
Destination signs	Hunter
Register	International R-10
Heaters	Exhaust pipes
Builder of engine	Yellow Truck & Coach Manufacturing Company
Bore and stroke	4 1/2 in. x 5 1/2 in.
Axle bearings	Timken
Interior lighting	Electric Service Supplies Company
Ventilators	Garland
Wheels	Budd
Tires	Goodrich pneumatic, 38x7
Lubrication	Alemite
Ignition system	Northeast
Engine starter	Northeast

## Rolling Stock

Evanston Railway, Evanston, Ill., has placed orders for six modern cars to cost \$12,000 each. It is expected the new equipment will be put in service within the next two months, bringing the total number of cars owned to nineteen.

Macon Railway & Light Company, Macon, Ga., is planning to spend \$314,000 in new equipment for its railway system following the granting by the City Council of its 10-cent fare petition. Specifications for the proposed equipment are now being drafted.

Illinois Traction System, Chicago, Ill., has announced plans for an expenditure of nearly \$50,000 for new rolling stock and equipment for its "through service" between Illinois Valley points and Chicago, according to a recent announcement of F. E. Fisher, general manager. Four of the one-man cars put in use a year ago are being made over at the Ottawa shops. The new route, service over which begins on May 1, will eliminate the transfer at Joliet.

## Power Houses, Shops and Buildings

Public Service Railway, Newark, N. J., will build an extension to its car-house shop building at South Orange Avenue, Newark, for a bus garage. This garage will have a capacity of about 45 buses and will house the buses of the South Orange Avenue line.

Piedmont & Northern Railway, Charlotte, N. C., subsidiary of the Southern Power Company, has purchased from the city of Charlotte fourteen acres of land on which to build a modern passenger depot. This depot is in connection with the extension of the present electric line northward from Charlotte to Lexington, N. C., and southward from Gastonia, N. C., to Spartanburg, S. C. The price paid for the passenger station site was \$46,500. The southern "missing link" between Spartanburg and Gastonia is considered one of the most important railway constructions announced in some time in this section.

International Railway, Buffalo, N. Y., has announced a comprehensive plan to attract more business to Niagara Falls and to improve facilities at the Falls View Bridge, formerly known as the Upper Steel Arch Bridge. The work intended to be carried out will cost \$75,000. The present bridge structure is adequate for many years to come, although there has been congestion at the American and Canadian ends. The principal difficulty has been experienced on rush days in the American exit, where a maximum of three automobiles per lane per minute has been passed by customs and immigration inspectors. The bridge structure itself will permit the flow of twelve automobiles per lane per minute, so that by enlarging the bridge ends the company will double the capacity of the structure. Detailed plans for improvement were submitted to the group. They provide for eight exit lanes instead of two as at present. A new and more comfortable office building will be erected for customs and immigration officials with canopies over the inspection platforms. Facilities will be provided for the parking of automobiles held for detailed inspection. Tracks now used by the cars of the Niagara Great Gorge trip will be relocated, thereby facilitating the movement of automobiles.

## Trade Notes

General Insulate Company, Inc., has been acquired by Insulation Manufacturing Company, Inc., Brooklyn, N. Y., and will be continued as a department of the new owners under the same corporate name. With the merger of these two plants each company will continue to specialize in Bakelite and the various kinds of molded products and insulators.

Chicago Fuse Manufacturing Company, Chicago, announces that it has purchased the Powerlet line of rigid conduit fittings formerly manufactured by the Multi Electrical Manufacturing Company. The purchasing company will continue the manufacture of its

present product, Gem and Union switch boxes, outlet boxes, fuses, electrical protective materials and other wiring devices.

National Pneumatic Company on April 15 will move its New York offices to the Graybar Building, 420 Lexington Avenue, New York. The Graybar Building, located in the heart of the Grand Central business section, is adjacent to the New York Central Railroad Terminal, and by subway connection to the Pennsylvania Railroad Terminal.

Haskelite Manufacturing Corporation, Chicago, Ill., furnished its product, Plymetl, for the roofing of the new twin coach designed and built by Frank R. Fageol of Oakland, Cal. This new bus was fully described in the JOURNAL for Feb. 26.

Textile Leather Company, Newark, N. J., and the Maumee Finishing Company, Toledo, Ohio, have practically completed a merger which will result in the formation of the Textile Leather Corporation. Officers of the new corporation will be announced at an early date. Rumors announcing the closing of the Newark plant, according to a statement by the company, are entirely unfounded and the plant will continue to operate in the future as it has in the past. A new plant is nearing completion at Toledo which will supply the Western and Middle Western business and most of the automobile trade. The new corporation will be incorporated for \$2,000,000 and there is no stock for sale. L. H. Green is at present acting as president of the Textile Leather Corporation and will continue to do so until new officers are elected.

## New Advertising Literature

Ganz Electric Company, Ltd., Budapest, Hungary, is celebrating its 40 years as a manufacturer of transformers by the issuance of a handsome historical booklet that not only features the various inventors that had a part in the establishing of the company but gives an exhaustive résumé of the Ganz transformers and where they have been installed. The booklet is illustrated with sepia engravings.

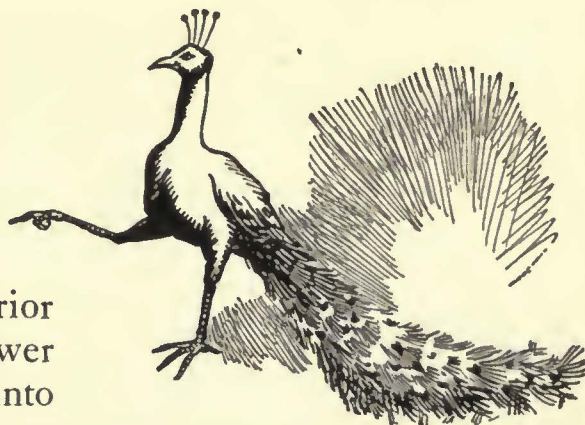
Okonite-Callender Cable Company, Inc., Paterson and Passaic, N. J., is issuing a folder giving additional information for the users of Okonite tree wire.

Lincoln Electric Company, Cleveland, Ohio, has just issued its 1927 edition of the "Instruction Manual." This publication, which is revised annually to cover the latest practices used in manual electric arc welding, is of interest to practically every one who uses arc welding. Among the subjects treated are high-speed steel welding, high-pressure pipe welding, automobile frames, boiler repairs, welding cast iron, manganese steel welding, carbon arc welding, manufacture of machinery and equipment using welded steel in place of castings.

Condit Electrical Manufacturing Corporation, Boston, Mass., is featuring its Type N-4 safety switch by a humorous folder signed by "Safety Sam."

## Do Accidents Affect Net Revenue?

Accident claims, due to failures of inferior hand brakes in emergencies or during power interruptions, may not cut very deeply into net revenues, but it is a sufficient amount to justify steps being taken to eliminate such accidents.



## “Peacock” Staffless Brakes

Reg. U. S. Pat. Off

are like an insurance policy, protecting against inroads upon net income and accident reserves due to failures of hand brakes.

No matter how badly brake shoes are worn or how loose the brake rigging is, Peacock Staffless Brakes insure adequate braking power. In practice, test and experience, they have proved their merit beyond all argument or doubt. They pay for themselves.

May we furnish you with additional facts, figures and estimates?

**National Brake Company, Inc.**

890 Ellicott Square

Buffalo, N. Y.

*Canadian Representative:*

Lyman Tube & Supply Co., Ltd., Montreal, Can.



The  
Peacock  
Staffless

# The Maintenance Sheet Tells the Story

## MEMORANDUM

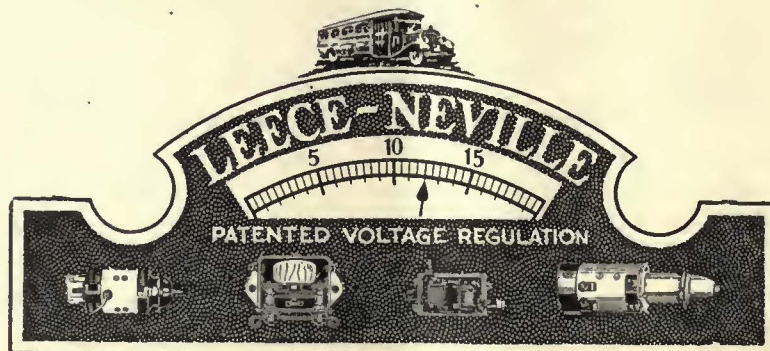
*For your information.  
Maintenance sheets show  
maintenance costs on elec-  
trical equipment are  
lower than on any other  
part of the bus, or for any  
other type of equipment.*

The company who furnished this information operates 400 busses.

They know what they're talking about.

Many trucks and busses, Leece-Neville equipped, have run 125,000 miles without removing batteries for any repairs.

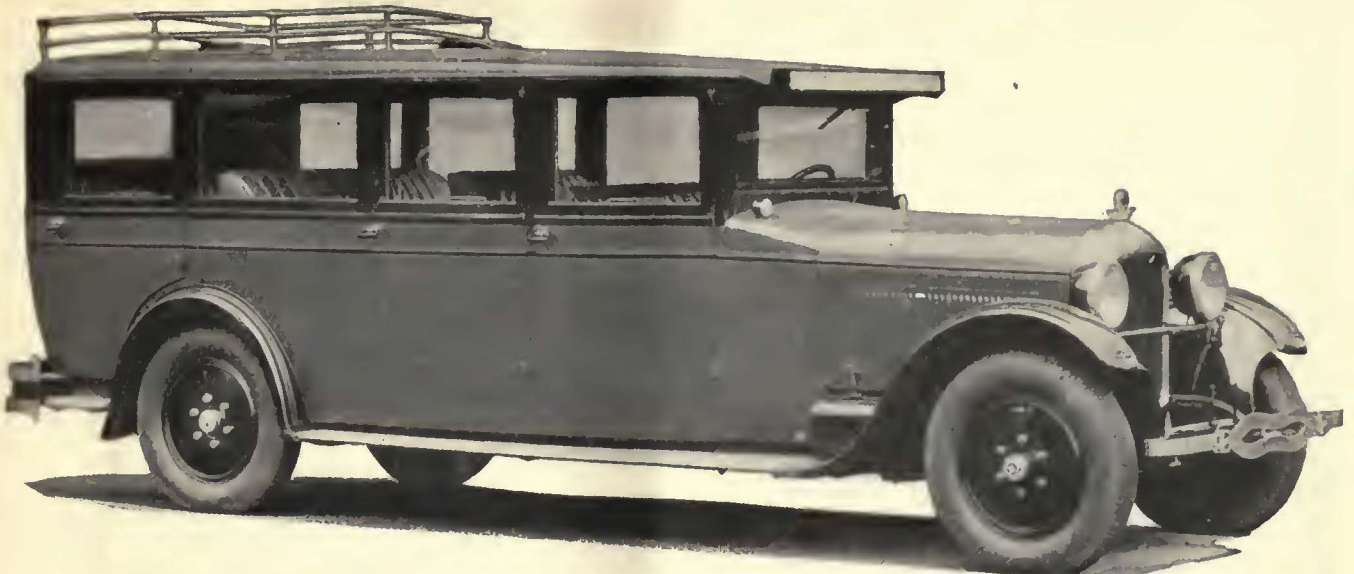
This service is available for you. Why not have it? And prolong battery life.



**The Leece-Neville Co.**

5353 Hamilton Ave., Cleveland, Ohio





12-passenger Cross-seat Sedan-type Bus mounted on the Studebaker 158-inch Chassis. Price \$3785, f. o. b. factories  
 Sedan and parlor type bodies up to 15-passenger capacity are available on the same chassis. Studebaker also builds a 184-inch chassis, which accommodates 15-18 passenger bodies for highway work and a special 21-passenger street car type for city service

# More profit per passenger mile with this NEW-TYPE Bus

**I**N a recent nation-wide investigation of operating costs and practices in the bus business, Studebaker found that the medium-capacity bus of low first cost and low operating cost invariably gives more profit per passenger mile.

The New Studebaker Bus Chassis is therefore built in the two sizes proved to be most profitable: (1) 158-inch wheelbase for 12 to 15-passenger bodies, and (2) 184-inch wheelbase for 18 to 21-passenger bodies.

Due to standardized design and volume production in the great Studebaker plants, first cost is remarkably low — the medium-capacity Studebaker Chassis with body complete sells for half the price of a large-capacity bus.

Operation costs are equally low in comparison. Records show that the Studebaker bus, operating under the identical conditions of the average large-capacity bus, is 40 per cent lower in actual vehicle operation and overhead cost.

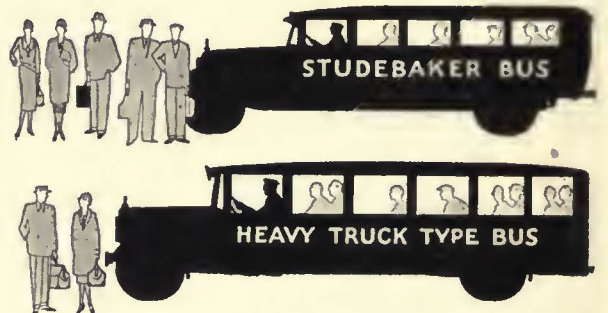
Thus with one-half the initial and operating cost, the bus operator can purchase and operate two Studebaker busses for the same outlay as one large-capacity bus. The auxiliary bus is available for conventions, outings and other special service. Further, in case of accidents, the operator with an extra bus suffers no loss through interrupted service.

These advantages which result in increased profit per passenger mile apply in equal ratio to the fleet owner as to the individual operator.

### Outstanding Features

- 1 75-horsepower, 6-cylinder Studebaker Big Six L-head engine.
- 2 Staunch channel steel frame, tied by 8 stout cross-members.
- 3 Extra large rear axle shaft of chrome Molybdenum steel, 2½ inches in diameter.
- 4 Sturdy, resilient springs of best grade Vanadium steel.
- 5 Low hung frame provides safety and comfort in riding; easy entrance and exit for passengers.
- 6 Over-size propeller shaft, held rigid by a ball-bearing steady rest.
- 7 Powerful hydraulic brakes operating on four wheels, supplemented by service brake on rear wheels and emergency brake operating on drive shaft.

## STUDEBAKER BUS CHASSIS



Due to its low initial and operating cost, the Studebaker Bus Chassis under average conditions, requires only 5 passengers to pay operating costs. The large capacity truck-type bus requires 8 passengers. Since the average load is 10 passengers, it will be seen that the Studebaker Bus carries 5 profit-producing passengers as against only 2 passengers carried at a profit by the larger type bus.

Get full particulars of the new Studebaker Bus Chassis. Mail the coupon below—and obtain free a copy of our unique booklet, "Profitable Bus Operation." It gives facts and figures of vital interest to every bus owner.

The Studebaker Corporation of America,  
 Dept. B, South Bend, Ind.  
 Send me free "Profitable Bus Operation" without obligation.

Name .....

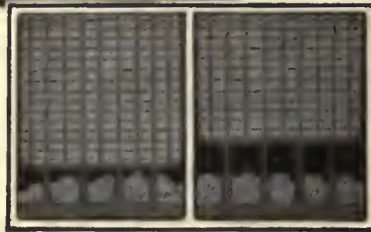
Address .....

City..... State.....

How many busses have you at present?.....

What kind? .....

# Keeping 'em on the Road



Note the difference in the sediment space in the cell shown at the left and the cell of a Willard Battery shown at the right. This extra sediment space is one of the features that keeps Willard Batteries on the road delivering uninterrupted service month after month.

WILLARD STORAGE BATTERY COMPANY  
CLEVELAND, OHIO



Every idle bus hour makes a leak in earnings that is difficult to mend. And idle hours are sure to follow when sediment bridges across the bottom of the plates. Saving bus hours was fully considered when the Willard Bus Battery was designed.

*F.A. Willard*

# Willard Batteries

## DURBAN, *South Africa*



**T**HE mail boat "Kenilworth Castle," arriving at Durban, Natal, South Africa, from England, is met by two conveyances from the Marine Hotel. The International Motor Coach and the low, swift truck built by International to the highest standard, make many trips weekly to the docks at the port and meet twelve trains daily coming over the South African Railways.

Managing Director Joel of the Marine Hotel is an enthusiast on the subject of International Motor Coaches, and so are

a multitude of owners closer home and the world around. International Harvester offers the operator this quality coach at low cost. The inviting interior holds perfect comfort for 15 passengers in the Club Coach and for 17 in the Sedan-type Coach. Distinctive lines, easy riding features, and all-around economy recommend this unit for every passenger transportation enterprise. Service through 125 Company-owned branches in the U. S. May we send detailed information?

INTERNATIONAL HARVESTER COMPANY  
606 So. Michigan Ave. of America Chicago, Illinois  
(Incorporated)

# INTERNATIONAL *6-cylinder* Coaches



## Interurban Transportation today has unusual upkeep problems

WHETHER you have extended your lines with busses or not, your shops have one constant maintenance factor—bolts and nuts.

The electric traction end of it requires constant attention. The quality of bolts and nuts must be high if frequent replacements are to be avoided.

With the motor bus the same holds true with greater empha-

sis, as the strains and stresses of bus travel necessitate frequent overhaul.

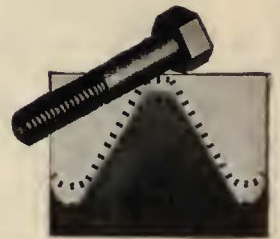
See that your shops use only Empire New Process Bolts, with their threads of gauge-like accuracy and their high tensile strength.

*Samples for testing on request.*

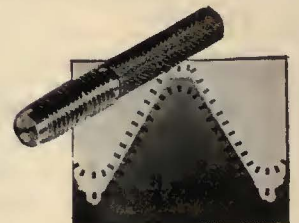
**RUSSELL, BURDSALL & WARD**  
**BOLT & NUT COMPANY**  
 PORT CHESTER, N.Y.

Branch Office: Chicago  
 Branch Office: Detroit  
 Branch Office: Rock Falls, Ill.  
 Branch Office: Seattle  
 Branch Office: San Francisco

*Makers of Bolts, Nuts and Rivets Since 1895*



*This is the thread profile of an Empire New Process Bolt as projected by the screw thread comparator.*




*This is the thread of a hardened and ground gauge as projected by the screw thread comparator.*

# EMPIRE *New Process* BOLTS

over 80,000 lbs. tensile strength

Baker  
*Raulang*  
BUS  
BODIES



**R**IDING comfort, added seating capacity, long life, low upkeep cost, are a few of the many *provable* advantages of Baker-Raulang Bus Bodies—the result of 73 years of body-building experience.

A full line is offered, varying from 17 to 29-passenger capacity, designed for city, suburban and parlor car service.

*Descriptive bulletins gladly sent on request.*

**THE BAKER-RAULANG COMPANY**  
Bus Body Division CLEVELAND, OHIO

# LOW MAINTENANCE

**A**FTER your pole line has been in service six or seven years—what do you have, replacements or profit? It's the number of renewals, the maintenance cost, and the line strength after five, ten, twenty and thirty years that determine the return on your pole line investment.

Biggest returns are obtained from Creosoted Pine Poles. They have greatest strength and this strength is permanent. As a result, they have longest life, lowest percentage of renewals, stand up during all kinds of storms and have lowest maintenance. Creosoted Pine Poles are so reliable, that frequent inspection is unnecessary—an important factor in further reducing maintenance costs.

*Illustration shows International Creosoted Pine Poles in the Pueblo-Canon City Transmission Line, Southern Colorado Power Company.*

International Creosoting & Construction Co.  
Galveston—Texarkana—Beaumont



# International Creosoted Yellow Pine Poles

**"STANDARD"**

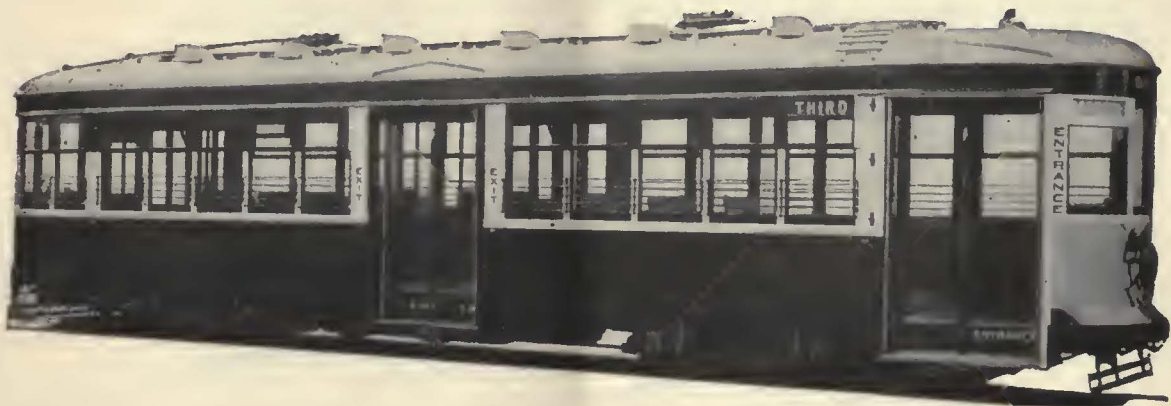
Look for this mark



**STEEL PARTS**

of Standard Quality on

*Steel Axles Steel Springs  
Armature Shafts  
Rolled Steel Wheels*



## FALLING IN LINE WITH PROGRESS

**P**ROGRESS in the Electric Railway Industry is marked by constant improvement in equipment and constant lowering of costs. In rehabilitation of old cars as well as in construction of new cars, "Standard" Steel Wheels, Armature Shafts, Axles and Springs will assure the most immediate improvement and the greatest ultimate economy.

# STANDARD STEEL WORKS COMPANY

PHILADELPHIA, PA.

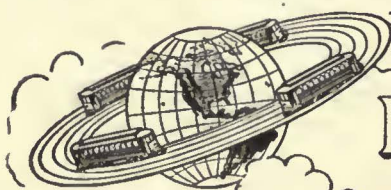
BRANCH OFFICES:  
HOUSTON, TEXAS  
PORTLAND, ORE.  
RICHMOND, VA.

SAN FRANCISCO  
ST. PAUL, MINN.  
PITTSBURGH, PA.

CHICAGO  
ST. LOUIS  
NEW YORK

WORKS: BURNHAM, PA.

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

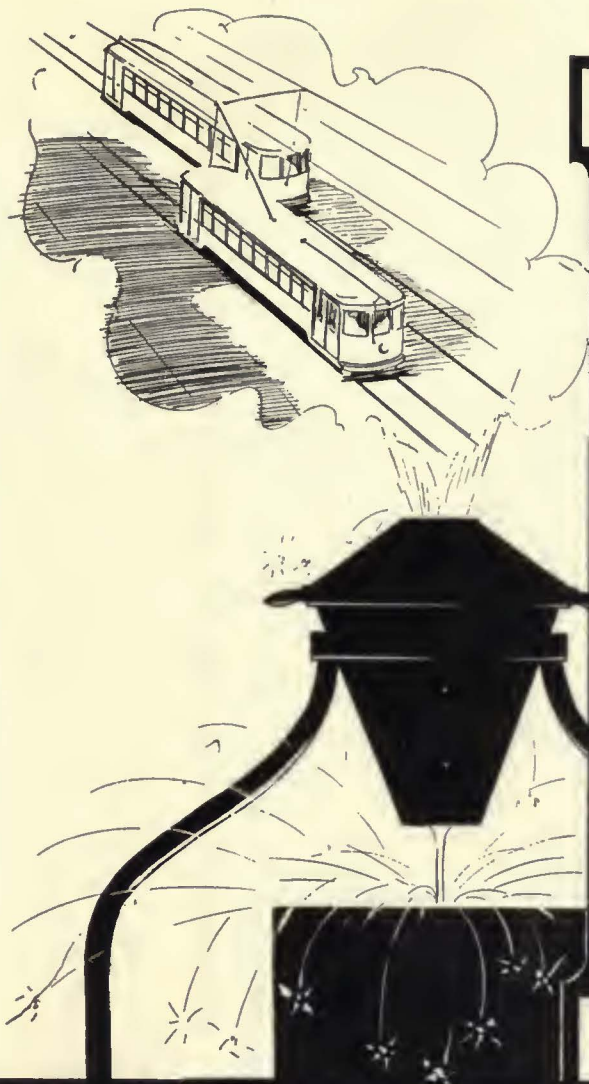


**Barron G. Collier**

INCORPORATED

CANDLER BLDG. NEW YORK





Get the track  
ready for those  
modern cars

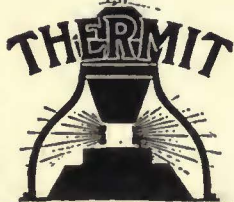
**THERMIT-WELD IT**  
*this spring!*

"MILLIONS FOR MODERN CARS" is now a slogan in the industry. Managements are all talking about replacing the obsolete rolling stock with new, attractive, speedy and comfortable cars.

But if these modern cars are to win back a lucrative passenger traffic for the railways, they must at least be given a fair chance to show their good points. Rough track, with cupped or broken joints will not afford a smooth or fast, or quiet ride no matter how fine the car itself may be.

Millions for modern cars is a good slogan but add a few thousands for Thermit-welded track this Spring. Thermit welding eliminates the joints, making a continuous rail on which cars can operate faster, more quietly and smoothly.

Old track can be saved for satisfactory service for many years by THERMIT-WELDING. Let us show you how!



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

PITTSBURGH

CHICAGO

BOSTON

SOUTH SAN FRANCISCO

TORONTO



## *Renew your old track for the last time—*

Track renewal with wood ties is only a temporary improvement. The use of steel ties however, means a permanent track foundation. Temperature variations, water and decay do not affect Carnegie Steel Ties. This is proved by the excellent condition of these ties uncovered for rail renewal after 18 years in heavy duty service.

The illustration shows an inexpensive renewal job. Wood ties set in concrete had been formerly used. After eleven years service, steel ties were substituted, using the old concrete base.

For real economy, renew your old track for the last time with Carnegie Steel Ties. They guarantee lower costs per mile per year.

Booklet—"Steel Cross Ties"—on request.

# **CARNEGIE STEEL COMPANY**

**General Offices • Carnegie Building • 434 Fifth Avenue**

**PITTSBURGH PENNSYLVANIA**





The immaculate trimness  
and the luxurious appoint-  
ments of Lang Bodies produce  
a delighted anticipation of  
a comfortable trip ahead!



The Sterling Mark on Bus Bodies

# LANG BODIES

*create new passengers*



The signal to stop is made with regret—in a Lang Body.

Passengers in this mood ride often. They tell others about the route. Revenue is increased.

By studying every requirement for passenger comfort and combining luxurious appointments with sturdy construction, Lang not only creates new passengers but adds many miles to body life.

THE LANG BODY COMPANY  
CLEVELAND, OHIO

*"After all—  
it's the Setting  
that counts!"*



*For Modern Car Upholstery  
you can't do better than*



**Plush** *always looks clean  
and is easiest to keep clean*

Fifty thousand tiny erect "hairs" in every square inch of genuine Massachusetts Mohair Plush pile! Each is separate, tough, springy and smooth in texture. Dust will not adhere to these. It sifts down to the base, whence it can easily be removed with a vacuum cleaner.

That is why plush always looks clean, and why it is the easiest of all car seat materials to *keep clean,—really clean.*

Passengers prefer plush because it does not soil their clothes. Operators prefer it because it looks better longer,—and usually outlives the car itself.

The latest genuine Massachusetts Mohair is all that could be desired in up-to-the-minute upholstery for every type of car.

Quotations and samples on request.

**MASSACHUSETTS MOHAIR PLUSH CO.**

New York Agent:  
Sisson Supply Co.  
1845 Grand Central Terminal,  
New York City

Main Office  
200 Devonshire Street, Boston, Mass.  
Makers of BAY STATE PLUSH

Western Agent:  
Midgley & Borrowdale  
1822 McCormick Building  
Chicago, Illinois

**MASSACHUSETTS MOHAIR PLUSH**  
*The railroad standard for over 35 years*

## Quick Installation At Low Cost!



Type AFT-2 Arc Weld Bond, Installed

*Isn't that  
what you want?*

Extra heavy steel terminals permit the use of large welding rod and large welding currents. Quick installation at low cost is what you get with Erico Type A F T-2 arc weld bonds.

As plus features the big copper "U" loop gives great flexibility.

The stranded copper cable eliminates destructive vibration—even the passing of high speed trains doesn't injure it. And the great strength of the weld assures permanent terminal contact.

What more can you ask of a rail bond?

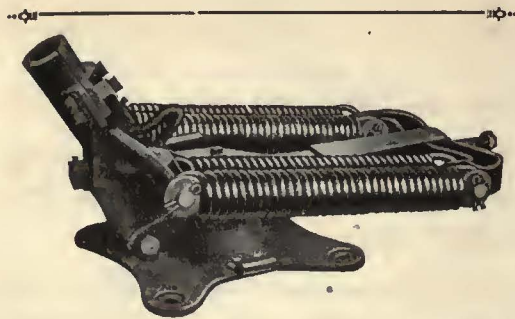
*Details upon request.*

**The Electric Railway Improvement Co.**

2070 E. 61st Place

Cleveland, Ohio

## Do You Think You Could Build a Nuttall Trolley?



You doubtless could if you knew what grade of metal to put in the foot, the swivel, the pole socket, etc.—if you knew where they had to be reinforced to withstand strains and where they had to be lightened to keep down weight; if you knew a reliable foundry that could furnish suitable castings; if you had \$60,000 worth of special machinery, tools, jigs, reamers, drills, etc., but even so, if you didn't have 35 years of experience and a crew of skilled mechanics you couldn't equal a Nuttall Trolley. So why should you think anyone else could?

Why should you buy just trolley poles, trolley harps, trolley wheels? If they cost less than Nuttall's its poor economy anyhow because they are worth less. And it is worth something *more* to get with your purchase the feeling of confidence inspired by a product you know is right.

*Buy genuine Nuttall Trolley parts, poles, wheels, harps, from Nuttall.*

**R.D. NUTTALL COMPANY**  
PITTSBURGH  PENNSYLVANIA

All Westinghouse Electric & Mfg. Co. District Offices are Sales Representatives in the United States for the Nuttall Electric Railway and Mine Haulage Products. In Canada: Lyman Tube & Supply Co., Ltd., Montreal and Toronto.



1927



**T**HE Duff Governor-Controlled, Self-Lowering Jack shown above is one of the most important lifting Jack developments within the past fifty years.

It is the **ONLY** jack on the market that employs the Governor Principle—the **ONLY** self-lowering jack that is absolutely under control of the operator at every moment, or that can be stopped instantly at any point without danger to jack or load.

This jack, in 15-ton capacity, renders a safe and quick service for general lifting duty. Here

is a one-man, high-speed jack which handles lifting jobs under every condition with greater speed, safety, and ease than any other jack in existence.

Available also in 25-, 35-, 50-, and 75-ton capacities, all with a generous margin of safety above rated capacities. And as in all DUFF Jacks, simplicity of design, excellence of workmanship, and quality of materials combine to the virtual elimination of maintenance cost. You'll find every DUFF Jack a powerful and profitable servant. Write for detailed information.

*DUFF Jacks are GOLD MEDAL Jacks—awarded the Gold Medal (highest award) at the Sesqui-Centennial Exposition in Philadelphia, 1926; also at St. Louis, 1904; Portland, Oregon, 1905; Buenos Aires, 1910—each time in competition with the World.*

**THE DUFF MANUFACTURING COMPANY, Pittsburgh, Pa.**

Established 1883

Cable Address "Leverjack"

NEW YORK

ST. LOUIS

CHICAGO

SAN FRANCISCO

ATLANTA

HOUSTON

**DUFF JACKS**



# Advance Notice!

An Announcement of the utmost importance to the Electric Railway Industry will be made in this Journal, in the near future by the

**VERSARE CORPORATION**  
Albany, New York



## BUFFALO

### Hand-Holds—

are a necessity! Without them great difficulty is experienced by passengers attempting to walk through cars. They create better public relations! They will not stain the hands, and the riding public, which shuns anything soiled, is pleased with this feature. This also helps to improve good will!

And they are moderately priced. *Investigate.*

**CENTRAL EQUIPMENT COMPANY**  
800 Englewood Ave., Buffalo, N. Y.



## COLUMBIA

### Railway Supplies and Equipment

Machine and Sheet Metal Work

Forgings  
Special Machinery and Patterns

Grey Iron and Brass Castings

Armature and Field Coils.

*The*  
**Columbia Machine Works**  
*and M. I. Co.*  
265 Chestnut St., corner Atlantic Ave.,  
Brooklyn, N. Y.

## Griffin Wheel Company

410 North Michigan Ave.  
Chicago, Ill.

## Griffin Wheels

with  
**Chilled Rims**  
and

**Chilled Back of Flanges**  
**For Street and Interurban Railways**

#### FOUNDRIES:

Chicago  
Detroit  
Denver  
Cleveland

Boston  
Kansas City  
Council Bluffs  
Salt Lake City

St. Paul  
Los Angeles  
Tacoma  
Cincinnati



# How to build radio sets

## —and service them in operation

Do you want to know how to build yourself a late model radio set?

Do you want to know how to improve your radio set?

Do you want to know how to test your set, how to locate troubles and how to repair your set?

Do you want to give radio service to others?

This new book—just out—gives you the practical information you want about constructing and repairing all kinds of radio receiving sets.

### Moyer and Wostrel's PRACTICAL RADIO CONSTRUCTION AND REPAIRING

319 pages, 5 x 8, illustrated, \$2.00

This new book gives you a practical explanation of radio construction and repair that will be valuable to you in operating your own set or in giving radio service to others.

It starts in with radio fundamentals and takes you step by step through every important radio detail up to the latest types of eliminators and chargers. Plain instructions for construction. Plain instructions for connecting and testing. Plain instructions for repair. Get this specialized information. It will mean a lot to you in getting more enjoyment and money out of radio.

See your copy FREE

Send no money. Let us send you your copy for 10 days' free examination. If you want it, fine. If you don't want it, send it back. Mail the coupon today. Fill it out and get it off now!

Mail this coupon now



## McGraw-Hill FREE EXAMINATION COUPON

McGraw-Hill Book Co., Inc., 370 Seventh Avenue, New York.  
You may send me on 10 days' approval, Moyer and Wostrel's RADIO CONSTRUCTION AND REPAIR, \$2.00 net, postpaid. I agree to remit for the book or to return it postpaid within 10 days of receipt. (To secure books on approval write plainly and fill in all lines.)

Name .....  
Home Address .....  
City and State .....  
Name of Company .....  
Occupation .....  
(Books sent on approval to retail purchasers in U. S. and Canada only.)  
E.R.J. 4-9-27

## FOR SAFETY FROM FIRE INSTALL THE



Safety demands that every car or bus be equipped with a *Pyrene* Fire Extinguisher. The riding public expect and are entitled to the protection from fire which this extinguisher assures.

Aside from the protection from fire afforded by such installation, to both rolling stock, operator and passengers, the schedule of the Central Traction and Lighting Bureau specifies a charge of 5¢ on motor buses, 3¢ on interurban and 1¢ on urban cars, for the absence of fire extinguishers.



The slight outlay involved by having rolling stock equipped with an Improved *Pyrene* (one-quart) Fire Extinguisher should be regarded as an investment—a device that helps make safety from fire certain should be popular.

Safety adds to the revenue of the operating company by inspiring confidence in the riding public toward modern transportation.

Many of the leading Public Service Corporations recognize this and have equipped their cars and buses with *Pyrene* Fire Extinguishers—they know a burning car or bus need not be abandoned if a *Pyrene* Fire Extinguisher is at hand.

For the protection of electrical equipment, power houses, car barns, shops and storerooms *Pyrene* (1½ quart) Fire Extinguishers are dependable in every emergency.

PYRENE MANUFACTURING CO.  
NEWARK, N. J.

"Fortify for Fire Fighting"

# Bankers and Engineers

## Ford, Bacon & Davis Incorporated Engineers

115 Broadway, New York  
PHILADELPHIA CHICAGO SAN FRANCISCO

## The J. G. White Engineering Corporation

Engineers—Constructors

Oil Refineries and Pipe Lines, Steam and Water Power Plants, Transmission Systems, Hotels, Apartments, Office and Industrial Buildings, Railroads.

43 Exchange Place

New York

## KELKER, DELEUW & CO.

CONSULTING ENGINEERS

REPORTS ON

Operating Problems Valuations Traffic Surveys

111 W. Washington Street, Chicago, Ill.

## THE BEELER ORGANIZATION

Transportation, Traffic, and Operating Surveys

Coordinating Service—Financial Reports

Appraisals—Management

52 Vanderbilt Ave.

New York

## SANDERSON & PORTER ENGINEERS

PUBLIC UTILITIES & INDUSTRIALS

Design Examinations Construction Reports Valuations Management Valuations

CHICAGO

NEW YORK

SAN FRANCISCO

## ENGELHARDT W. HOLST

Consulting Engineers

Appraisals Reports Rates Service Investigation  
Studies on Financial and Physical Rehabilitation  
Reorganization Operation Management

683 Atlantic Ave., BOSTON, MASS.

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SEATTLE, L. C. Smith Building  
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SAN JUAN, Porto Rico, Royal Bank Building

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

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

Our advertisement in the issue of March 19 showed how  
**HASKELITE and PLYMETL**  
are helping many leading operators to cut down operating costs. Haskelite has been specified on a recent order for the Indianapolis Street Railway, Indianapolis, Ind.  
*Another ad will appear next week.*  
**HASKELITE MANUFACTURING CORPORATION**  
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**BATES EXPANDED STEEL POLES**  
*TOWERS — SUBSTATIONS*  
BATES EXPANDED STEEL TRUSS COMPANY  
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Better Quality Seats For Cars and Buses      Hale-Kilburn Co.  
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Made in single and double types to meet requirements of service. For hand or foot, mechanical or electric operation. Counters, car fittings, conductors' punches.  
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**More-Jones Brass & Metal Co.**  
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**“Opportunity” Advertising:  
Think “SEARCHLIGHT” First!**

**LEGAL NOTICE**

**STATEMENT OF THE OWNERSHIP,  
MANAGEMENT, CIRCULATION,  
ETC., REQUIRED BY THE  
ACT OF CONGRESS OF  
AUGUST 24, 1912**

Of Electric Railway Journal, published weekly at New York, N. Y., for Apr. 1, 1927.

State of New York } ss.  
County of New York }

Before me, a Notary Public in and for the State and county aforesaid, personally appeared C. H. Thompson, who, having been duly sworn according to law, deposes and says that he is the Secretary of McGraw-Hill Publishing Company, Inc., Publishers of Electric Railway Journal, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Publisher, McGraw-Hill Publishing Company, Inc., 10th Ave. at 36th St., New York, N. Y. Editor, Charles Gordon, 10th Ave. at 36th St., New York, N. Y. Managing Editor, Morris Buck, 10th Ave. at 36th St., New York, N. Y. Business Manager, L. F. Stoll, 10th Ave. at 36th St., New York, N. Y.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a cor-

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4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is (This information is required from daily publications only.)

**McGRAW-HILL PUBLISHING COMPANY, INC.**

C. H. THOMPSON, Secretary.

Sworn to and subscribed before me this 22nd day of March, 1927.

[Seal.] **MARTIN J. WIRMER,**  
Notary Public Queens County Certificate No. 1819. Certificate filed in New York County No. 272.  
(My Commission expires March 30, 1928.)

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4—32 seating capacity, Westinghouse 508-A motors, fully equipped. Splendid condition.

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1—Double truck snow sweeper, fully equipped.  
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**MASTER mechanic** of character and ability, 20 years' experience on city and interurban property, desires to make a change for personal reasons. Best of references, correspondence solicited. PW-993, Electric Railway Journal, 7 So. Dearborn St., Chicago, Ill.

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**MOTOR coach** or railway executive. Experienced in organization, operation and maintenance, route surveys, prediction of earnings, analysis of operating costs, preparation book of operating costs, operators bonus system, installation of standard accounting system and arrangement of efficient schedules. Rehabilitation of properties, passenger and freight tariffs. Known selection of proper equipment to assure most economical operation. Now employed, but seek opportunity for past successful methods to produce relatively greater results. Available on short notice. A-1 references. University graduate. Thirty-eight years old. Correspondence solicited. PW-989, Electric Railway Journal, 1600 Arch St., Phila., Pa.

**MR. MANAGER**. If not satisfied with revenue, operating costs, efficiency and co-operation of employees and general conditions, a reply to this advertisement will put you in touch with a superintendent of transportation capable of producing results you desire. PW-992, Electric Railway Journal, Guardian Bldg., Cleveland, Ohio.

**PRESENT manager** of street railway property in Middle West operating 70 cars and 65 buses, desires change for personal reasons. Forty-five years of age. Twenty years' practical experience. Correspondence solicited. PW-987, Electric Railway Journal, Bell Telephone Building, St. Louis, Mo.

### POSITIONS WANTED

**SITUATION** wanted as purchasing agent or executive assistant, eight years railway storekeeper, ten years lighting and railway purchasing, also general electric railway experience. PW-984, Electric Railway Journal, Guardian Bldg., Cleveland, Ohio.

**SUPERINTENDENT** transportation available; broad experience, fine record, city and interurban properties, co-ordination rail and bus, recognized ability, credited with building up one of the most loyal and efficient organizations in Central West and placing property on paying basis, progressive, efficient, a hustler, capable of getting results. Fine references, correspondence and interviews invited. PW-991, Electric Railway Journal, Guardian Bldg., Cleveland, Ohio.

**UTILITIES** executive available. Engineering graduate, broad operating and executive experience, railway, also light and power. Young and progressive with tried and proven ability. Railway activities known to the industry. At present employed; seek opportunity with larger interests. The opportunity for past successful methods to produce relatively greater results. PW-972, Electric Railway Journal, Tenth Ave. at 36th St., New York.

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20—All Steel Western Type 2-Way  
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**9 Birney Cars**  
GE 264 Motors, K 63 Controllers, DH 16 Compressors, Brill 79 E Trucks. \$1500 each.

**Transit Equipment Company**  
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Brill Built  
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Cars Complete—Low Price—Fine Condition  
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**The entire property of the  
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The Road and Equipment is in good operating condition. It was built during 1912-1913. The Road consists of 38.33 miles of main line track, laid with 70 lb. steel, section 7040, 2 miles of siding. There are 8 thirty ton interurban passenger cars equipped with 4 G.E. 201-H motors, K35-G controllers, single end operation. Baldwin Class 78-22A trucks with 36-in. steel wheels, Westinghouse combination automatic and straight air brakes, Tomlinson radial couplers.

Two Motor Express Cars with same equipment as passenger cars except they are double end control, one Snow Plow with V shaped plow on each end, double end control, with same equipment as passenger and express cars.

Two pay enter one man light weight 45 ft. cars, suitable for interurban or city work, double end control same equipment as above described cars. Four extra trucks, Baldwin Class 78-22A equipped with motors and wheels ready for service. Three complete sub-stations, one G.E. automatic control.

Everything must be sold. Full information and detailed description given upon application. Address

**MESABA RAILWAY COMPANY**  
Virginia, Minnesota

# WHAT AND WHERE TO BUY

Equipment, Apparatus and Supplies Used by the Electric Railway Industry with Names of Manufacturers and Distributors Advertising in this Issue

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 Westinghouse Air Brake Co.  
**Anchors, Goy**  
 Elec. Service Supplies Co.  
 Ohio Brass Co.  
 Westinghouse E. & M. Co.  
**Armature Shop Tools**  
 Columbia Machine Works  
 Elec. Service Supplies Co.  
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 Stands  
 Ramapo Ajax Corp.  
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 Stands  
 Ramapo Ajax Corp.  
**Axles**  
 Bemis Car Truck Co.  
 Bethlehem Steel Co.  
 Brill Co., The J. G.  
 Cincinnati Car Co.  
 St. Louis Car Co.  
 Standard Steel Works  
 Westinghouse E. & M. Co.  
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 Carnegie Steel Co.  
**Babbitt Metal**  
 More-Jones Brass & Metal Co.  
**Babbitting Deviers**  
 Columbia Machine Works & M. I. Co.  
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 International Register Co.  
**Batteries, Dry**  
 Nichola-Lintern Co.  
**Batteries, Storage**  
 Willard Storage Battery Co.  
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 Brill Co., The J. G.  
 Cincinnati Car Co.  
 Columbia Machine Works & M. I. Co.  
 General Electric Co.  
 More-Jones Brass & Metal Co.  
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**Bearings, Center and Roller Side**  
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**Bells and Buzzers**  
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 Brill Co., The J. G.  
 Lang Body Co.  
**Bodies, Passenger Car**  
 Baker-Raulang Co., The  
**Body Material, Haskelite and Plymet**  
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 Ohio Brass Co.  
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 Brill Co., The J. G.  
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 National Ry. Appliance Co.  
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 Cincinnati Car Co.  
 Columbia Machine Works & M. I. Co.  
 General Electric Co.  
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**Car Steps, Safety**  
 Cincinnati Car Co.  
**Car Wheels, Rolled Steel**  
 Bethlehem Steel Co.  
**Cars, Dump**  
 Brill Co., The J. G.  
 Differential Steel Car Co.  
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**Cars, Gas-Electric**  
 Brill Co., The J. G.  
 General Electric Co.  
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**Cars, Gas, Rail**  
 Brill Co., The J. G.  
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 Brill Co., The J. G.  
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**Cars, Self-Propelled**  
 Brill Co., The J. G.  
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 Cincinnati Car Co.  
 Columbia Machine Works & M. I. Co.  
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**Castings, Gray Iron and Steel**  
 American Steel Foundries  
 Bemis Car Truck Co.  
 Columbia Machine Works & M. I. Co.  
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 General Electric Co.  
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 Westinghouse E. & M. Co.  
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 Anaconda Copper Mining Co.  
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 Elec. Service Supplies Co.  
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 Baker-Raulang Co., The  
**Cranes, Hoists & Lifts**  
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**Crossing Foundations**  
 International Steel Tie Co.  
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 Wm. Wharton, Jr. & Co.  
**Crossings, Frogs & Switches**  
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 Wm. Wharton, Jr. & Co.  
**Crossings, Manganese**  
 Bethlehem Steel Co.  
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**Crossings, Track (See Track Special Work)**  
**Crossings, Trolley**  
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**Curtains and Curtain Fixtures**  
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**Derailing Switches**  
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 Columbia Machine Works & M. I. Co.  
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 Wish-Service, P. Edward  
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**Ears**  
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 Jackson, Walter  
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**Frogs, Trolley**  
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 Ohio Brass Co.  
 Westinghouse E. & M. Co.  
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 (Continued on page 48)

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St. Louis Car Co.
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Loran Steel Co.  
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- Splicing Sleeves (See Clamps and Connectors)
- Springs  
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- Springs, Car and Truck  
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American Steel & Wire Co.  
Bemis Car Truck Co.  
Brill Co., The J. G.  
Cincinnati Car Co.  
St. Louis Car Co.  
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Brill Co., The J. G.  
St. Louis Car Co.
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Carnegie Steel Co.
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Cincinnati Car Co.
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Ohio Brass Co.  
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- Strand  
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- Straps, Hand  
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Babcock & Wilcox Co.
- Sweepers, Snow (See Snow Plows, Sweepers and Brooms)
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- Switches, Selector  
Nichols-Lintern Co.
- Switches and Switchboards  
Consolidated Car Heating Co.  
Elec. Service Supplies Co.  
General Electric Co.  
Westinghouse E. & M. Co.
- Switches, Tree Rail  
Ramapo-Ajax Corp.
- Switches, Track (See Track Special Work)
- Tampers, Tie  
Railway Trackwork Co.
- Tapes and Cloths (See Insulating Cloth, Paper and Tape)
- Tee Rail Special Track Work  
Ramapo-Ajax Corp.
- Telephones and Parts  
Elec. Service Supplies Co.
- Telephone & Telegraph Wire  
American Steel & Wire Co.
- Testing Instruments (See Measuring, Testing, etc.)
- Thermomats  
Consolidated Car Heating Co.
- Gold Car Heating & Lighting Co.  
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Smith Heater Co., Peter
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Carnegie Steel Co.  
International Steel Tie Co.
- Ties, Wood Cross (See Poles, Ties, Posts, etc.)
- Tongue Switches  
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Bates Expanded Steel Truss Co.  
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- Track Grinders  
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Railway Trackwork Co.  
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- Track, Special Work  
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Columbia Machine Works & M. I. Co.
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- Treads, Safety Stair, Car Step  
Cincinnati Car Co.
- Tree Wire  
Okonite Co.  
Okonite-Callender Cable Co.
- (Continued on page 51)





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| Brake Hangers   | Spring Posts          |
| Brake Levers    | Bolster and Transom   |
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| Brake Fulcrums  | Manganese Brake Heads |
| Turnbuckles     | Manganese Truck Parts |
| Center Bearings | Bushings              |
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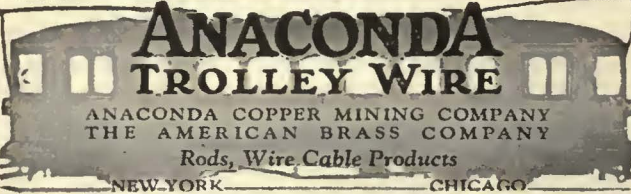
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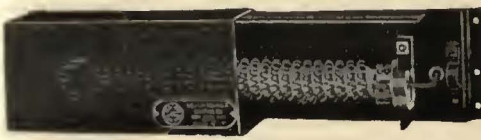


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