

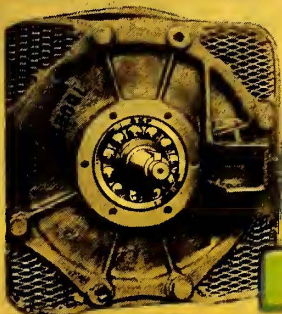
# ELECTRIC RAILWAY JOURNAL

McGraw-Hill Company, Inc.

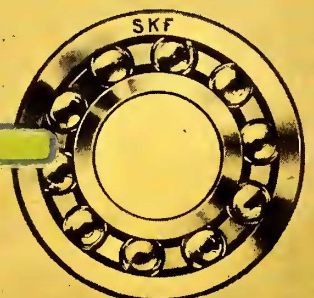
June 29, 1918



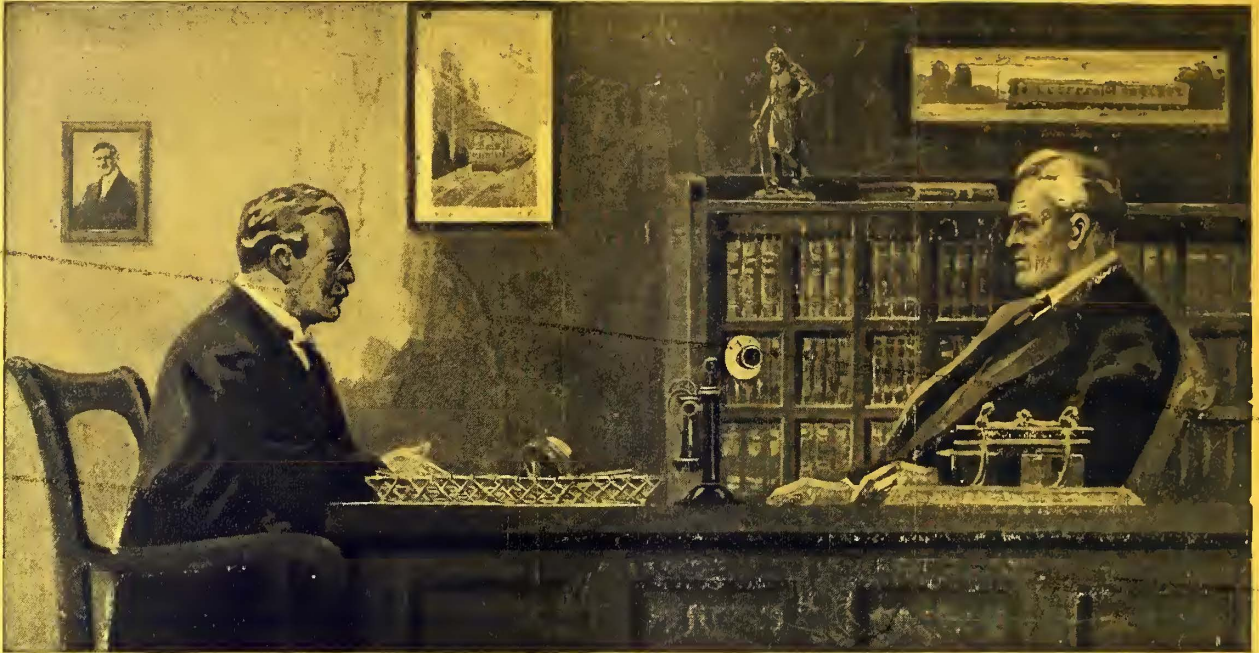
The General Electric No. 258 Motors on the safety cars of the Austin Street Railway are SKF equipped. To protect your motors from lubrication troubles specify ball bearings marked SKF.



# SKF







# A Conclusion

"I'm glad you referred me to the 'Electric Railway Journal' of May 11th when you were here last week," said the Vice President. "It is difficult for me to realize just why we have never gone into this freight question before. I am of the opinion that we should make a complete investigation of the freight haulage possibilities in our communities. We must get in touch more with the Boards of Trade and Merchants Associations in the business centers that we serve, and make it clear to them all how effectively we can serve them."

"All right, sir," replied the General Manager, "I am confident that they will co-operate with us. I am going to ask the Westinghouse Electric people to give us the benefit of their experience, and believe that they are in a position to furnish prompt and expert advice. They have standardized freight motors and locomotives, both of which are performing regular freight service successfully on a number of the foremost roads of the country."

"I believe you are right," said the Vice President. "They must have made an exhaustive study of Electric Freight Haulage requirements, before going into it so extensively."

Westinghouse Electric  
East Pittsburgh



& Manufacturing Co.  
Pennsylvania



# Electric Railway Journal

H. W. BLAKE, *Editor*

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 American Machinist  
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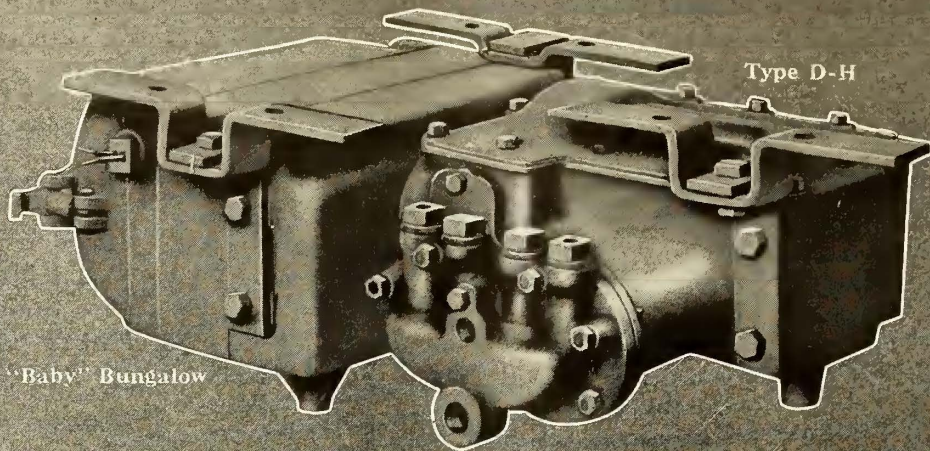
Engineering and Mining Journal  
 Electrical Merchandising  
 Coal Age  
 Chemical and Metallurgical Engineering  
 Engineering News-Record

Member Audit Bureau of Circulations. Member Associated Business Papers, Inc.

Circulation of this issue 6850 copies

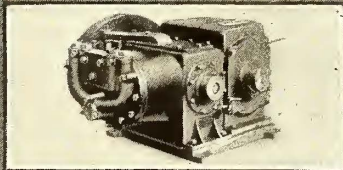
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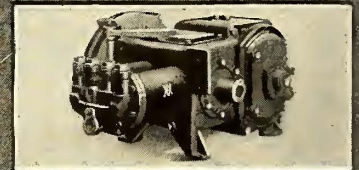


# Air Compressors

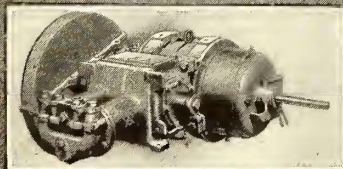
Westinghouse Air Compressors cover a broad field of service. Meet all operating conditions. Can be fitted to any current. Capacities range from 10 to 150 cubic feet per minute. Write to our nearest office.



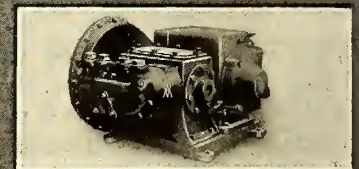
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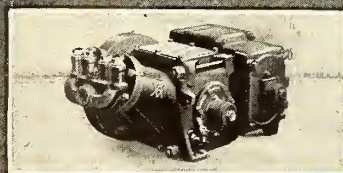
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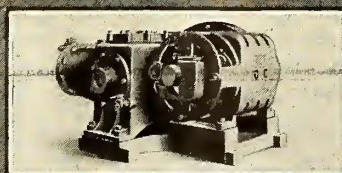
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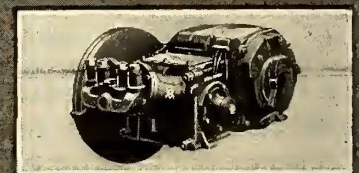
Type D-2-EG



Type D-2-L



Type C-60



Type D-3-La

*Brake Building our Business for a Lifetime*

## Westinghouse Traction Brake Company

General Offices and Works, Wilmerding, Pa.

Atlanta, Ga.  
 Boston, Mass.  
 Chicago, Ill.  
 Columbus, O.

Denver, Col.  
 Houston, Tex.  
 Los Angeles, Cal.



Mexico City  
 New York, N. Y.  
 Pittsburgh, Pa.

San Francisco  
 Seattle, Wash.  
 St. Louis, Mo.  
 St. Paul, Minn.



# Over the Top

## of Westinghouse High-Tension Transformers

### Are the Condenser-Type Bushings



The construction of Westinghouse Condenser-Type Bushings is such, that the voltage stress upon the insulation is practically uniform from the surface of the conductor to the grounded flange outside.

The fall of potential is also uniform along the outer surface of the insulation, from the grounded flange toward the point at either end where the high potential conductor emerges from the insulation.

The uniformity of dielectric stress along the surface, and approximate uniformity of dielectric stress in the insulating wall, together with strength of the materials, make a bushing of unusual electric and mechanical strength.

Westinghouse Electric &  
Manufacturing Company  
East Pittsburgh, Pa.

Sales Offices in All Large American Cities

**W**  
WESTINGHOUSE  
ELECTRIC

# Westinghouse



# Phono-Electric

For SAN FRANCISCO LINE PERFECTION

The United Railroads of San Francisco recently ordered 10 miles of No. 00 round Phono-Electric Trolley Wire.

This wire was used for installation at important intersections where uninterrupted service counts for something.

And, of course, Phono-Electric isn't going in on our **claims**, but on Phono-Electric achievements at San Francisco's hardest place—the double loop at Market Street ferry.

## PHONO-ELECTRIC

Users Can Put Off Metal Price Worries for Years

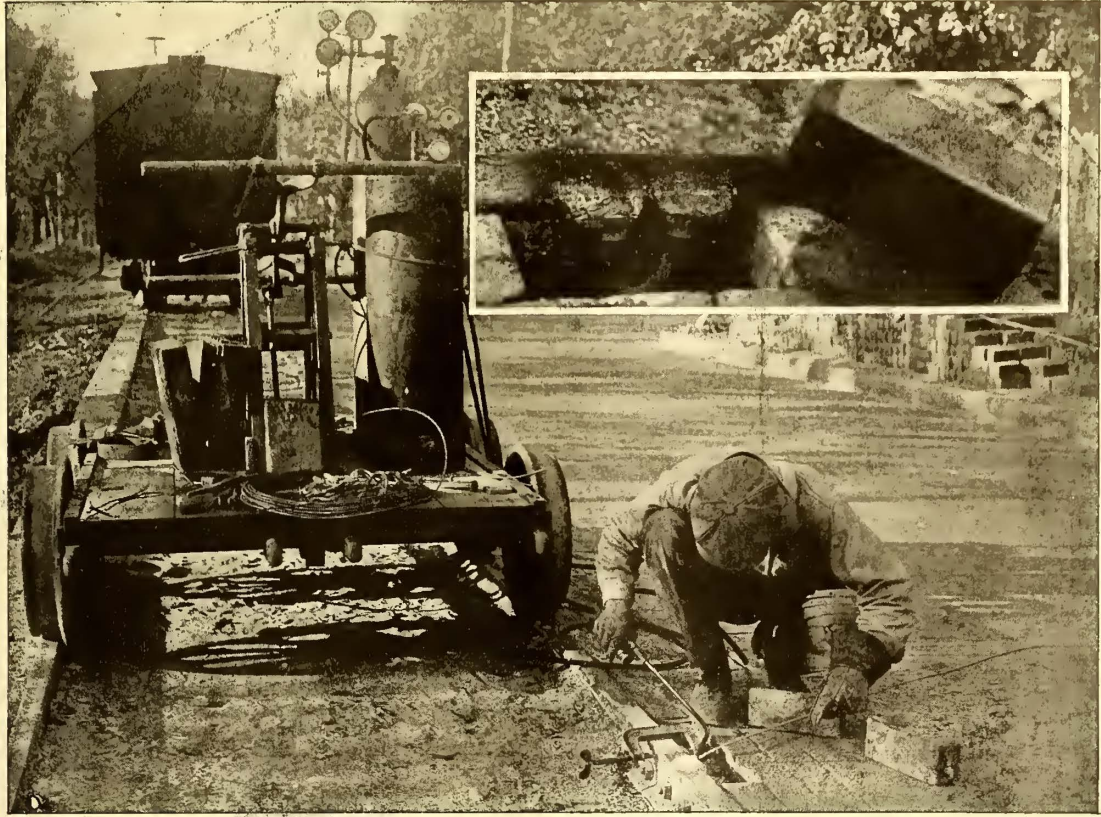
**Bridgeport Brass Company**  
**Bridgeport Connecticut**







# PRODUCTS



O-B Gas-Weld Bonds are particularly suited for paved streets. Only one or two bricks need be removed. The splice-plate is not disturbed—a valuable feature on any kind of rebonding.

## O-B Rail Bonds Score Four Big Points

One large electric railway commenced rebonding two years ago and has used for the work a total of 5500 O-B Gas Weld Bonds.

Recently the road reported that due to the O-B Bonds:

It has cut power cost.

It has given better service.

It has reduced the number of burnt-out armatures.

It has kept better schedules.

Good bonding always saves money and improves operation. Any O-B Bond is a good bond.

There are several types—one for each condition. Take up your problems with our bonding specialists.

**THE OHIO BRASS CO., Mansfield, Ohio**

New York

Philadelphia

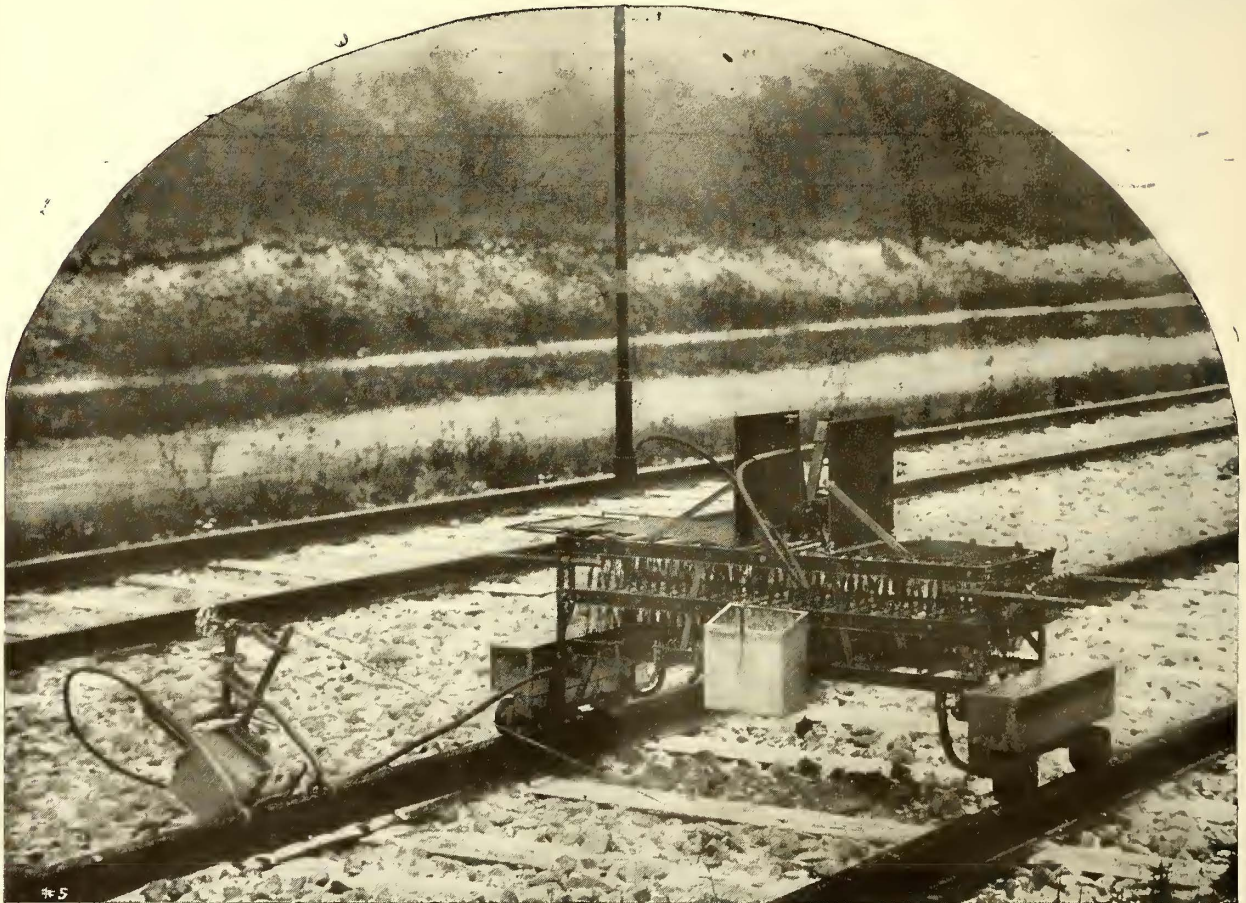
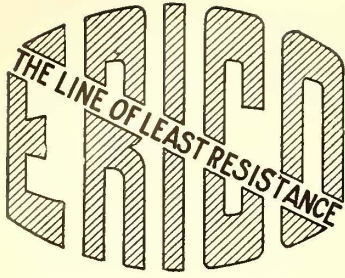
Pittsburgh

Chicago

San Francisco

Los Angeles





## *Where Voltage is Low*

as, for instance, at the end of the line, the Erico Portable Welder shows its great flexibility and usefulness as clearly and undeniably as anywhere else along the track.

Switches are so arranged that the outfit will weld rail bonds on voltages from 250 to 750.

Full information on request.

**The Electric Railway Improvement Co.**  
Cleveland, Ohio

---



# Wasted—

35% to 50% of TRACK MATERIAL

## INTERNATIONAL STEEL TWIN TIES

Obviate this wasted material and labor

Of What Engineering Value Is the Concrete or Ballast Between Wooden Ties? Absolutely None. It Represents an Economic Loss of Track Material and Labor.

Steel Twin Ties are designed to overcome just that condition. The effective tie bearing area is placed at the top of the tie and parallel with the rail.

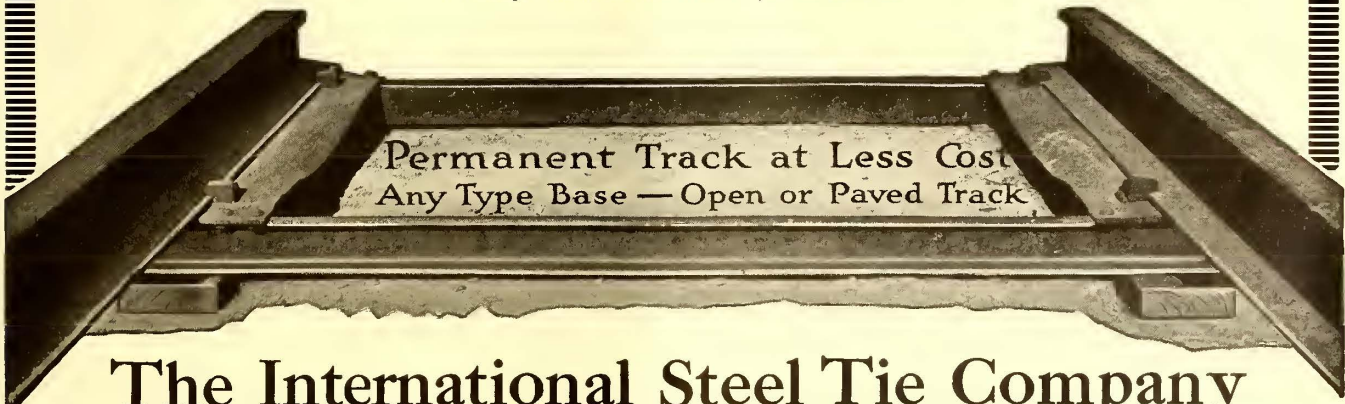
There is an engineering reason for every ounce of metal in a Steel Twin Tie. The 13 in. x 36 in. trussed plates carry the track loads and the 3 in. channels serve as anchorages and tie rods.

Several inches of concrete beneath the tie plate puts just that much in effective bearing. An inch more than is usually used. And at the same time the excavation and concrete quantities below base of rail are reduced one-half.

Any way you look at them they are engineeringly right. The longer you delay your purchase of some of these ties the more money you waste in extraneous track materials and labor.

Ask our users if you want our best sales argument. If you are convinced ask us for a quotation and delivery.

*Prompt deliveries made from stock.*



Permanent Track at Less Cost  
Any Type Base — Open or Paved Track

## The International Steel Tie Company

Manufacturers of Steel Twin Ties and Crossing Foundations  
General Sales Office and Works: Cleveland, Ohio

REPRESENTATIVES:

Western Eng'g Sales Co.  
Los Angeles, Cal.

San Francisco, Cal.  
Seattle, Wash.

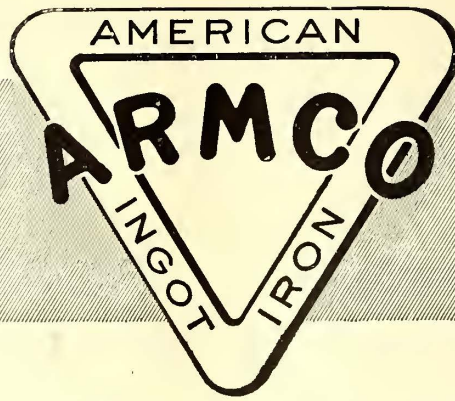
R. J. Cooper Co.,  
Salt Lake City, Utah.

J. E. Lewis & Co.  
Dallas, Texas.

Maurice Joy,  
Philadelphia.

William H. Ziegler,  
Minneapolis, Minn.





ACETYLENE

ELECTRIC

## ARMCO WELDING RODS

—the kind that make **safe** welding easy  
on new construction and repair work.

ARMCO Filler Rods are offered with two strong initial recommendations:

First: Manufacture of the raw iron with the skill and fidelity associated with all products of the American Rolling Mill Co., and

Second: Drawing and control of all finishing operations under direction of the laboratory specialists of the Page Steel & Wire Co.

Together these antecedents mean a reliability and uniformity heretofore not to be had, even in the best grades of Norway and Swedish irons.

ARMCO Rods being 99.84% pure iron, are peculiarly free from the sulphur, phosphorous, slag, oxides and other impurities that ordinarily destroy the homogeneity of the weld by introducing brittle, hard or weak spots, pin holes, blow holes, etc.

A weld made with ARMCO Rods closely approaches the original strength per square inch of the original metal section and lends itself particularly well to subsequent hammering or other finishing treatment.

The standardizing of two ARMCO Rods, one for acetylene and another for electric, *to do well* what has heretofore required a selection of one from ten to twenty grades greatly simplifies welding work, and ARMCO Rods now cost much less than any imported metal of approaching purity.

If interested in modern welding developments you will find it decidedly to your advantage to at least give ARMCO Rods careful test.

Ask us for performance records and reference to important users.

# PAGE STEEL & WIRE CO.

*Established 1883 as Page Woven Wire Fence Co.*

Makers of Copperweld Copper Clad Steel Wire; Armco Welding Rods and Electrical Wire; Wire Mill Products, Plain and Galvanized; Wire Fencing for all Purposes; Factory Gates; Wire of Special Analysis; Ornamental Iron Fence; Machine Guards; Tool and Stockroom Partitions; Architectural Iron.

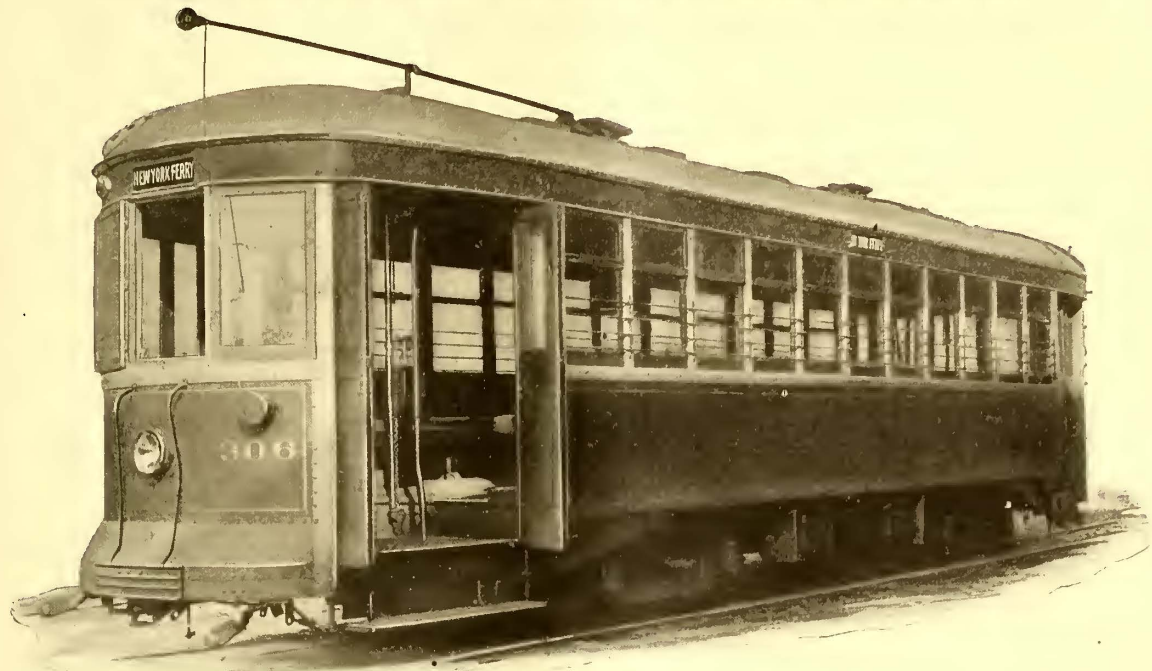
*FACTORIES: Monessen, Pa., and Adrian, Mich.*

GENERAL SALES OFFICES:  
30 Church Street  
New York

WESTERN REPRESENTATIVES:  
Steel Sales Corporation  
Chicago







Car operated by the Richmond Light and Railroad Co., New Brighton, N. Y.

## *Illuminated Car Signs and "Golden Glow" Headlights—Sure Signs of a Progressive Railway Company*

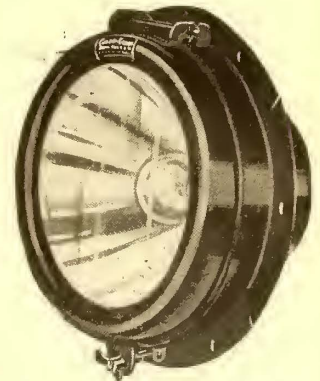
The Richmond Light & Railroad Company know well the great value of Keystone and Hunter Illuminated Destination Signs. Their signs attract riders for them and advertise their service, and besides, make easy the re-routing of their cars.

Their "Golden Glow" Headlights project powerful but soft non-blinding beams of golden light, thus lighting up a path of safety before their cars. In this manner "Golden Glow" Headlights inspire a certain confidence in both operators and riders.

*Write for complete data on this equipment.*



Typical Keystone Type Sign



"Golden Glow" Headlight  
Type SR-95

# **ELECTRIC SERVICE SUPPLIES Co.**

*Manufacturer of Railway Material and Electrical Supplies*

PHILADELPHIA  
17th and Cambria Sts.

NEW YORK  
50 Church St.

CHICAGO  
Monadnock Bldg.

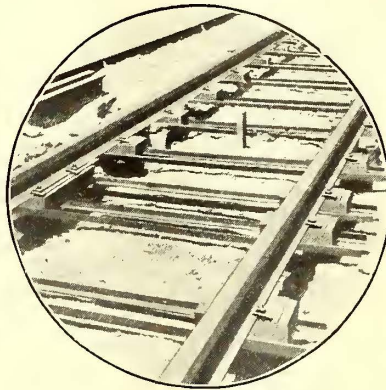
Canadian Distributors: Lyman Tube & Supply Co., Montreal, Toronto, Winnipeg.





The asphalt cushion in D-M Ties  
saves your rails, your track and  
your rolling stock

A 6" Steel I-Beam used  
as a Tie showed  
Indentations like  
**THIS!**



What must have been  
the effect on the roll-  
ing stock to produce a  
dent like  
**THIS?**

In the above small circular picture is shown  
a stretch of new track with D.M. Ties,  
ready for the concrete to be poured in to  
make a unit structure.



When a steel I-Beam fully 6 in. deep can  
be hammered and distorted as shown in this  
picture, enormously powerful blows must  
have rained upon it. It was the absence of  
a resilient cushion that made this tie suffer.  
Such destruction could not have occurred to  
D.M. Ties, which have wooden blocks, set  
in asphalt, joined by steel twin bars.

*Rigid—Resilient—Permanent.*

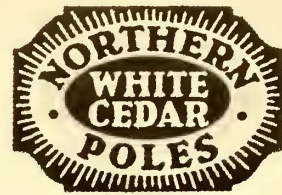
*Ask for details*

**THE DAYTON MECHANICAL TIE CO.**

201 Third Street Arcade  
DAYTON, OHIO







These Poles Have Rendered Long and  
Sturdy Service

# *Northern White Cedar Poles*

Lines of the Chicago & West Towns Railway Company at 64th Ave. South from Ridgeland Ave., Oak Park, Illinois.

Kind of poles—Northern White Cedar  
Height —50 and 55 ft.  
When set —In the days of the old  
County Traction Company.  
No records available.

Load carried—13 feeder cables. 350,000  
and 500,000 Cir Mills ca-  
pacity. Leading from  
Ridgeland P. House.

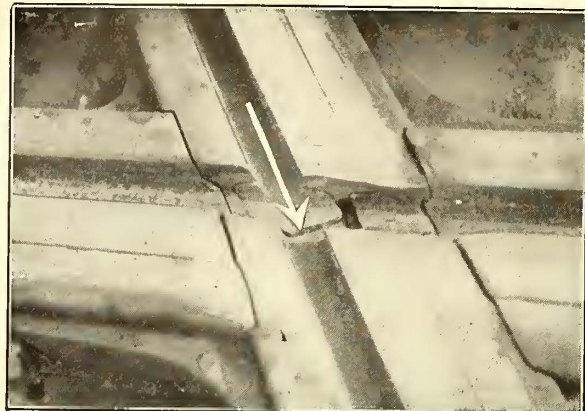
Present condition of poles is good.

The Chicago & West Towns Ry. connects Oak Park, River Forest, Maywood, Melrose, Cicero, Berwyn, Riverside, Lyons, La Grange & Forest Park. It was formerly controlled by County Traction Company and operated by the Chicago Railway Company.

**Northern White Cedar Poles** are Light in weight, Easy to Transport and Erect. They make the Sturdy, Serviceable, Attractive line.

**Northern White Cedar Association, Lumber Exchange, Minneapolis, Minn.**





Main filling or backbone of rolled rail crossing broken at flangeway intersection

# Rolled Rail Crossings

develop frequent fractures at the point shown in the picture to the left. Such breaks are unavoidable because of the lack of flexibility at the flangeway intersections.

## Balkwill Articulated Cast Manganese Crossings

have scientifically designed joints at the places where breakage formerly occurred. It takes several rolled rail crossings to equal the life of but *one* Balkwill Articulated Cast Manganese Crossing. Therefore the Balkwill Crossing is the cheapest in the long run.

It saves interruption to traffic, makes less demand on labor, which is now so scarce, and also reduces the cost of making replacements frequently.

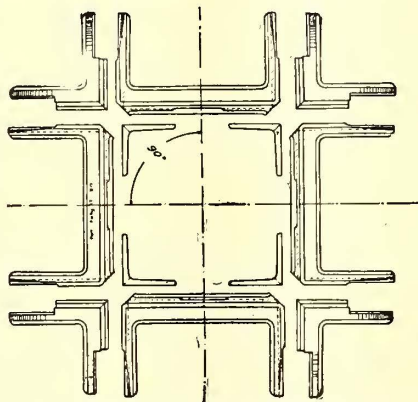
In other words, it gives you

**MORE WEAR PER DOLLAR THAN ANY OTHER CROSSING YOU CAN BUY**

**Order Balkwill Articulated Cast Manganese Crossings Direct from Your Special Work Manufacturers**

Write us for detail information and list of installations. Don't accept a substitute as there is none.

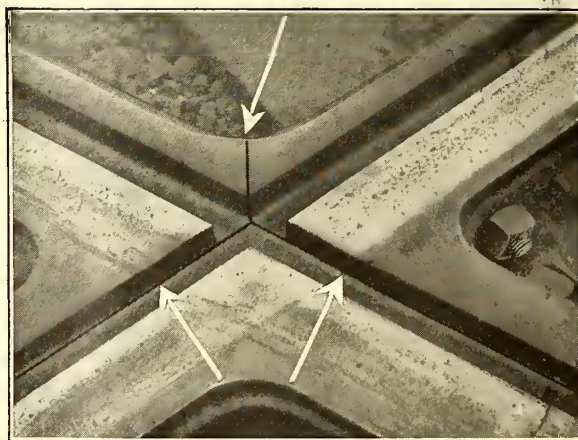
**The Balkwill Manganese Crossing Co.**  
506 Williamson Building, Cleveland, Ohio



Joints at the flangeway intersections of Balkwill Articulated Cast Manganese Crossings positively eliminate breakage

Experience has demonstrated that rolled rail wears out in less than one-quarter the time of cast manganese.

As a result these crossings have to be replaced frequently so that their apparent lower first cost, when compared with that of articulated cast manganese crossings, is deceptive.

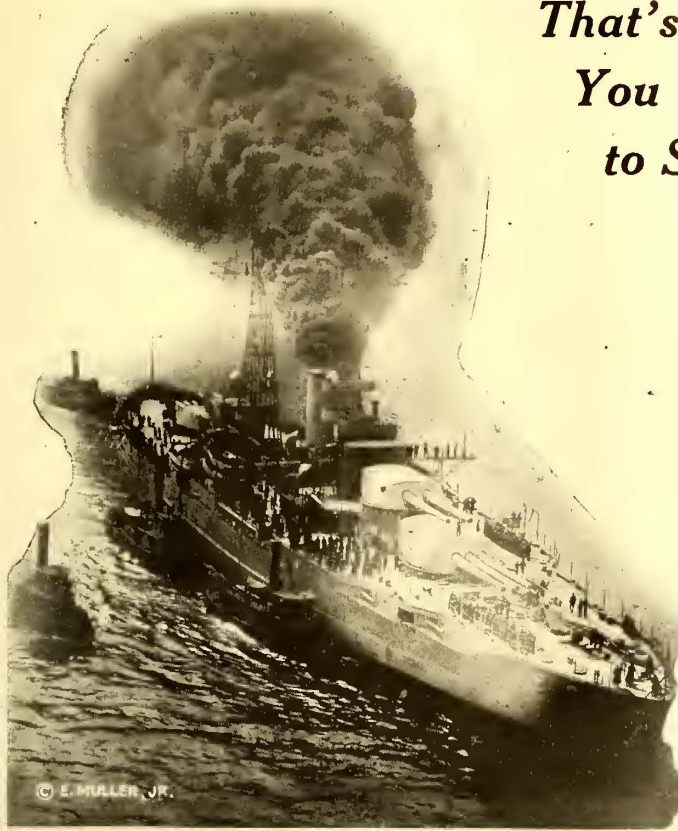


Joints in Balkwill Articulated Cast Manganese Crossings are life savers. They positively prevent breakage at flangeway intersections, permitting 100% wear before renewal is necessary

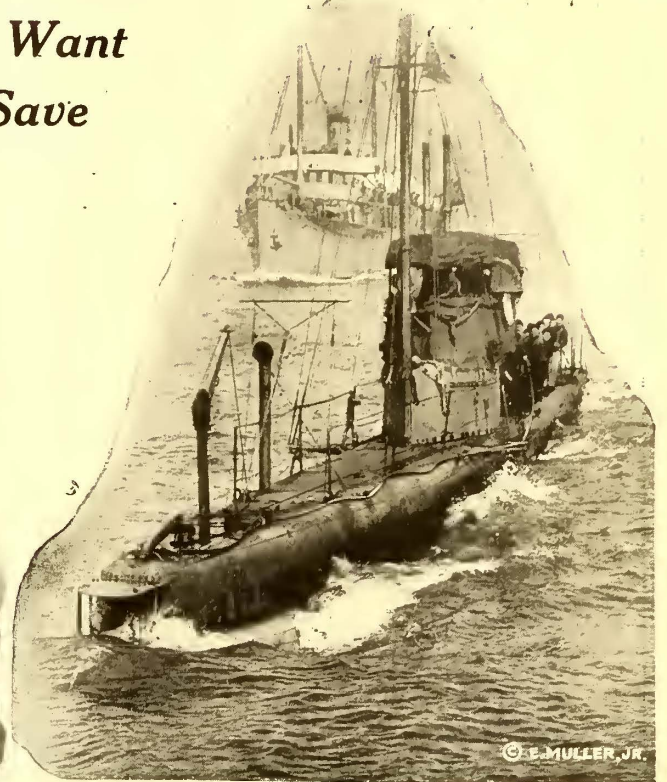


# METER YOUR CAR ENERGY—

*That's What  
You Want  
to Save*



On Battleships



On Submarines

## The Sangamo Economy Meter Is a Rugged Device!

The Sangamo ECONOMY Railway Meter is a rugged, time-tried device, with an excellent record for power saving. This meter has the same element as in the well-known Sangamo d.c. mercury flotation meters for every electrical service. It is of the same design as the element of the meters which control the lighting equipment on all the cars of the Pullman Company and on several steam railways, and on battleships and all the submarines of the U. S. Government. Sangamo mercury meters are standard on the electric trucks of nearly all manufacturers of electric vehicles.

In fact, the mercury meter is widely used wherever there is need for an electrical energy-measuring device that has demonstrated its ability to withstand the punishment of rough usage, including the jarring incident to electric railway operation.

### Economy Electric Devices Co.

L. E. Gould, Pres.

Exclusive Sales Agent

Sangamo Economy Railway Meter  
Old Colony Bldg., Chicago

The electrical characteristics of the ECONOMY Meter are guaranteed. Its cost for maintenance as definitely established by one large property over a period of two and a half years, based on the use of 100 meters, is not more than \$1.00 per meter per year.

ECONOMY Meters on your cars will decrease operating costs.

The ECONOMY Meter induces saving by a method which does not encourage practices contrary to "safety first."

It will start paying for itself immediately.

Let us send you further details. Write for our new booklet on Efficient Electric Railway Operation.



"The Watchdog of Your Power"



# Repairing and Reclaiming A War-Time Necessity

“The Indianapolis Method”

## CONSERVE

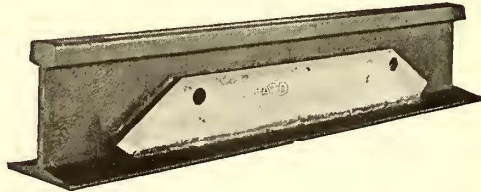
Skilled Labor  
New Material  
Heavy Overhead  
Current Losses



Portable Electric  
Welder

## RECLAIM

Broken Track  
Worn Track  
Damaged Frogs  
Worn Switches



The “Simplex” Joint  
for High Tee Rails



The “Apex” Joint  
for Guard and Girder Rails

The ever-increasing prohibitive price of new material—the excessive cost of skilled labor and the shortage of both, present a difficult problem to the roads.

Trains and trolleys must be kept running. Delays must be prevented. Tracks and switches must be kept in perfect condition.

The logical answer is the Indianapolis Portable Electric Welder, the quickest

and most satisfactory of track repairers and reclaimers.

Can be operated by unskilled labor.

Economical in first cost and future maintenance.

Positive in results.

Indianapolis Joints and Bonding Plates are electrically welded and show greater conductivity than the rail itself. They eliminate current losses.

Let us send you full particulars.

**95% of the important Electric Railways NOW using Indianapolis Welder and Joint**

*Users of Indianapolis Patented Welders, Joints and Welding Supplies Fully Protected*

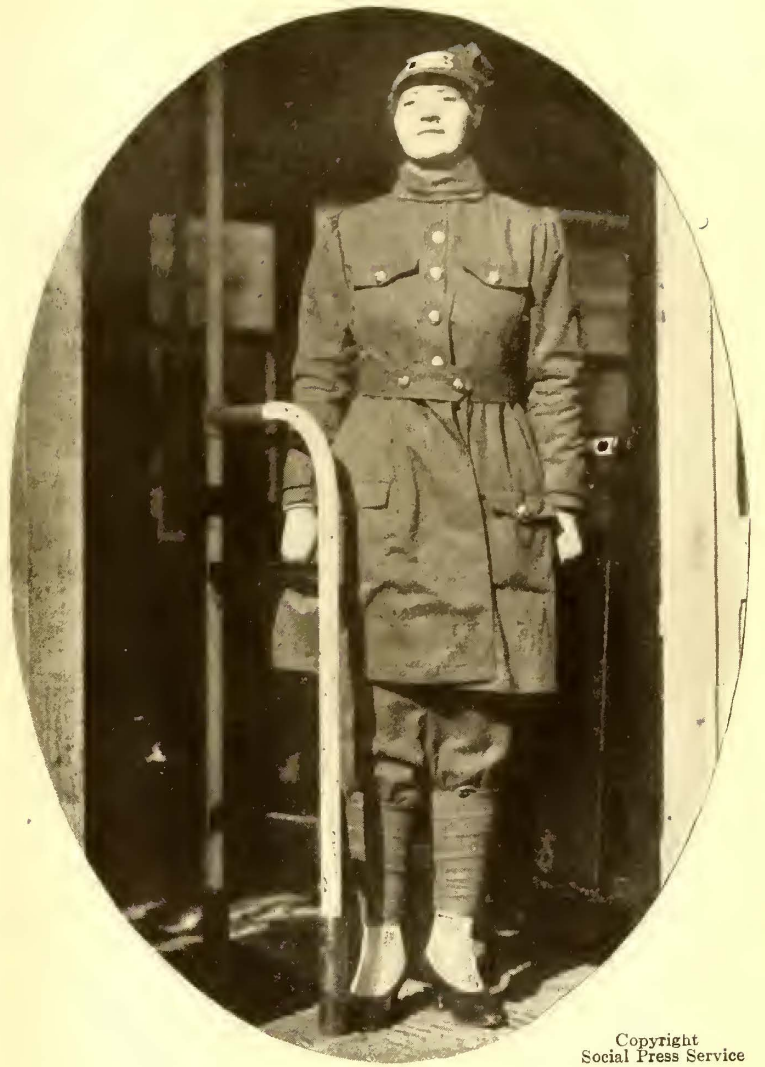
**Indianapolis Switch & Frog Company, Springfield, Ohio**



# Attention!

America's First Surface Car Conductress Made Possible by

# National Pneumatic Control



Copyright  
Social Press Service

Spic, span and smiling she stands ready to fill the gap made by a lad who has gone "over there."

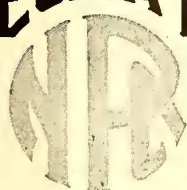
But, fortunately, her employer—the New York Railways—had already made the job of **car cashier** an easy one.

Behind a grill and fare box she will sit at ease, and have full control of all exit and entrance through the use of a foot trip which actuates the National Pneumatic door engines. In fact, she is literally

*Queen of the Air*

**NATIONAL PNEUMATIC COMPANY**  
INC.

50 Church St. New York



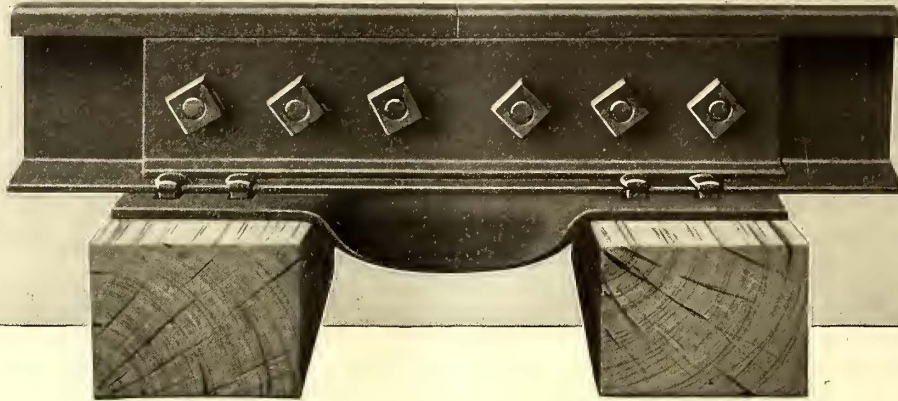
515 Laflin St. Chicago



# Flat-ended ABBOTT RAIL-JOINT PLATES



offer the best solution for the joint problem with high T or girder rails in paved streets



**T**HE flat-end pattern of Abbott Plate gives the joint a strong unfailing support that preserves track surface and keeps the rail ends from battering and does so without imposing any obstructions to interfere with paving. The blocks or bricks will fit close against the joint without chopping or the use of special shapes.

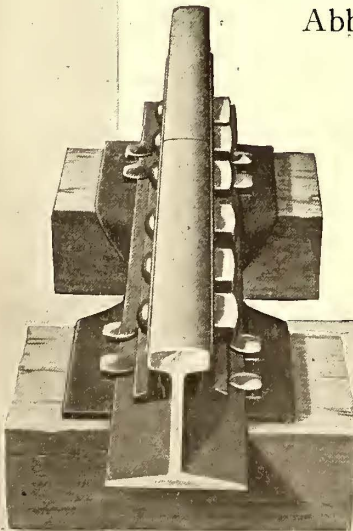
The relief of the splice bars from excessive wheel load greatly prolongs their useful life by reducing the wearing and cutting from back action and also lessens the tendency of holes to shear and nuts to loosen.

Many installations of long standing have demonstrated an appreciable saving in renewals and maintenance costs, to say nothing of the smoother riding qualities of the track.

Abbott Plates are made in patterns and sizes to meet every requirement of new track in electric railway service, and can often be utilized to decided advantage in prolonging the life of old track.

*Write for our Book,  
"Improved Track Appliances."*

312

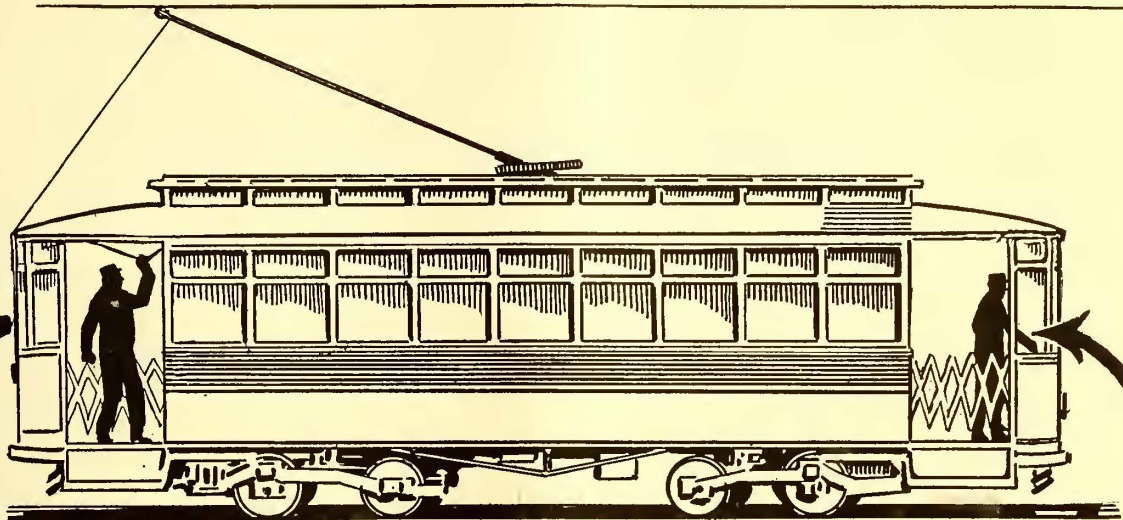


## Lackawanna Steel Company

LACKAWANNA, N. Y.

ATLANTA CHICAGO DETROIT ST. LOUIS  
 BUFFALO CLEVELAND PHILADELPHIA  
 BOSTON CINCINNATI NEW YORK  
 SAN FRANCISCO HAVANA





It is  
hard to get  
increased income  
here

As long  
as there is  
unchecked waste  
here

When one of your department managers comes to you and says he has to have more money to run things (a mighty common experience nowadays), your first impulse is to try to determine how he can economize, isn't it?

And naturally the public and the Public Service Commissions ask the same question when the electric railways ask for more revenue.

The only decisive answer is to show that you are doing everything possible to lower costs of operation.

You cannot make that answer unless you have *some* means of showing that your car crews are being led to use the minimum amount of power necessary to first-class operation.

There are many ways of doing this. It is our belief that

## The Arthur Power-Saving Recorder

is a successful, economical and efficient way.

That belief is also held by experienced railway men who are using the Arthur Recorder on their cars.

You might not agree with this opinion, but you certainly owe it to yourself to be sure that you know all the facts before you reach your conclusion.

**The Arthur Power-Saving Recorder Co.**  
Second National Bank Building, New Haven, Conn.





**B**ECAUSE of the many requests that we have received asking us to rent our DYNAMOTOR for rail bonding, shop-welding and building up cupped rails, we have inaugurated a selling plan whereby small monthly payments may be made; all rent to apply on the purchase price, if it is decided later to keep the machine.

The superiority of the LINCOLN DYNAMOTOR, from the standpoints of efficiency and economical operation, has been demonstrated by many street railway companies. The monthly saving by using our DYNAMOTOR will amount to more than three months' rental.

This is an opportunity for you to equip properly for rail bonding, shop welding and repair work, without having to charge the entire price of a machine to your operating expense or machinery investment account. Just place us on your payroll.

Full details regarding the plan will be given you if you fill in and return the coupon.

*This is an exceptional opportunity for you—get busy!*

# THE LINCOLN BONDING COMPANY

**General Offices: CLEVELAND  
New York Office: 30 Church St.**

AGENTS:

BOSTON, Chas. N. Wood Co.  
PHILADELPHIA, Railway Track-work Co.  
PITTSBURGH, Electrical Engineering & Manufacturing Co.  
CHICAGO, Holden & White, Inc.  
ST. LOUIS, W. L. Rose Equipment Co.  
CANADA, Lyman Tube & Supply Co., Ltd., Montreal, Toronto, Winnipeg.

**The  
Lincoln  
Bonding Co.  
Cleveland, O.**

Please give me details of your new rental plan for Lincoln Dynamotors.

Name.....

Title.....

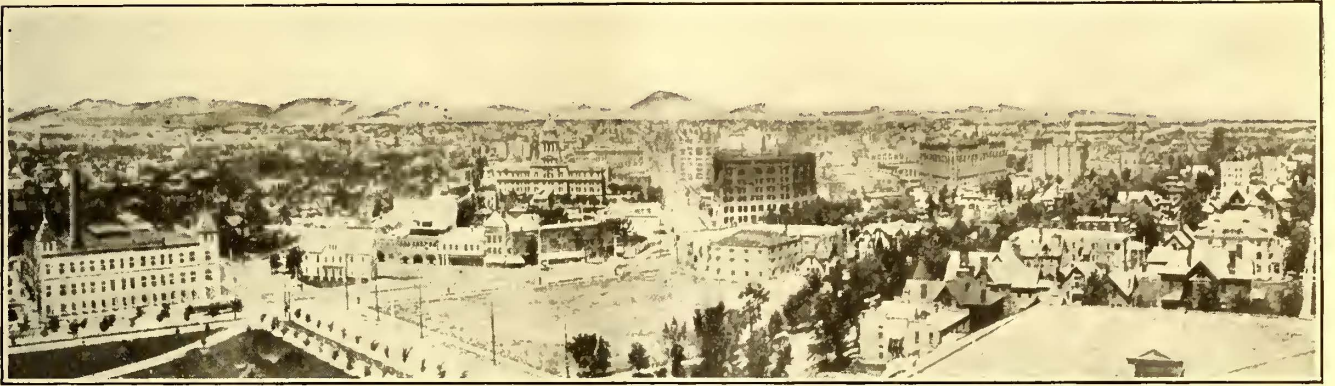
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City..... State..... E. R. J.





Denver as seen from the Capitol Site—1870.



Denver as seen from the Capitol Dome—1902.

Denver, the Beautiful—originally called "Auraria," "The Land of Gold" (now West Denver) and St. Charles (Denver proper).

## "Pike's Peak or Bust!"

the great rallying cry of the gold hunters of 1858, proved a false slogan, for no gold has ever been found in the immediate vicinity of the Peak itself.

When the first batch of prospectors in this region found that signs of gold were few and far between a reaction set in and the tide of migration flowed back from Denver eastward and southward, stemming the westward tide and causing vast disappointment among those who believed these stories and turned back after coming within easy distance of their goal.

Horace Greeley, of the *New York Tribune*, set out to see for himself what the conditions were, and his truthful reports restored the confidence of the people in the ultimate prosperity of the new territory.

On June 6, 1859, Greeley reached Denver (the name had just been adopted in honor of Governor James W.

Denver, of Kansas, whose territory at that time included Colorado). He put up at the "Eldorado Hotel" and there became the chief actor in the famous \$5 shave—the story of which traveled all over the world and did more to make Denver famous than all the optimistic tales of the years before.

A year later occurred the great attack by outlaws on the *Denver News*, and for months afterwards, editors, reporters and "comps" worked with revolvers close at hand and Winchester rifles on their desks and across their type cases. Silver and other precious metals finally were discovered in quantity; the city grew rapidly and became a Mecca for the ailing and weak, whose health was rebuilt in the rarified atmosphere of the Mile-High City. Transportation facilities kept pace with the growth of the community and, despite a few early disappointments, reached a high state of efficiency.

# Galena Oils

in the dry, rarified atmosphere of mountain districts give the same satisfactory results as in the dense humid air along the seashore, while Galena Service through its national organization reaches into the farthest corners of the United States with the same efficiency and reliability as it does in the immediate neighborhood of our refineries.

## Galena-Signal Oil Co.

Franklin, Pa.



# Splicing Sleeves



FOR a low cost, light weight splicing sleeve of exceptional strength, the R2 cannot be excelled.

LARGE corrugated wedges of forged steel hold the wire in a tight grip.

CLINCH ends transfer the trolley wheel from the wire to the sleeve without pounding or arcing.

THE trolley clearance on the under run is good.

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\*Southwest General Electric Company. For Canadian Business refer to Canadian General Electric Company, Ltd., Toronto, Ont.  
General Foreign Sales Offices, Schenectady, N. Y.; 120 Broadway, New York City; 83 Cannon St., London, E. C., England.

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## At Houston, Tex. 128 PEACOCKS

The Houston Electric Company is another property where the Peacock Brake pays for itself. There are 128 of them in service on cars which have no other brake equipment.

And if you were to ask what trouble does the Peacock give, you would learn that there's no such animal.

The Peacock just does its duty day in and day out with most trifling maintenance charges.

What more can you ask of a brake except low first cost?

And the right Peacock for the right car is low in first cost, too.

**National Brake Co.**  
Buffalo, N. Y.



The Eccentric  
Drum



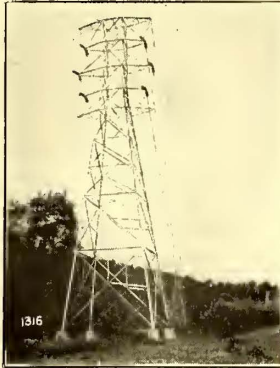




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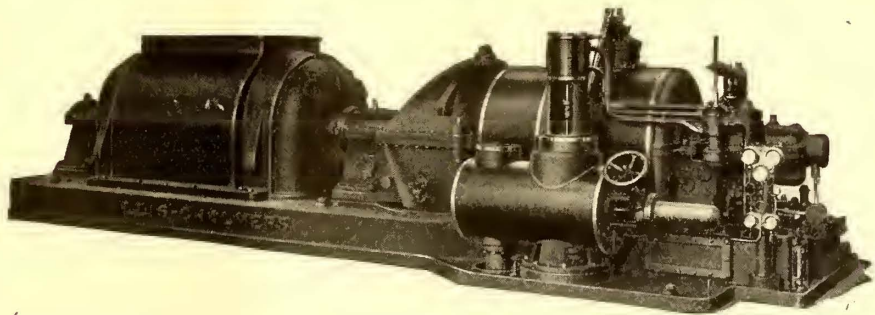
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Units built in sizes from 200 kw. up



3200 KW., Max. 3600 R.P.M., H.P. Condensing Steam Turbine and Alternator. Unit of this size installed in the plant of the Eastern Pennsylvania Ry. Co., Palo Alto, Pa.

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# What does it Cost You per Mile per Year to Maintain Track?

The chances are that if your maintenance methods do not include the consistent and regular use of a

## RECIPROCATING TRACK GRINDER

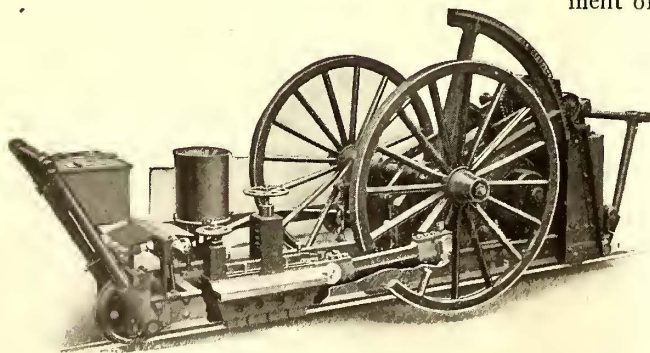
for grinding out bad spots and keeping rails smooth you can add to your present methods the cost of equipment and labor for that purpose

### Without Adding to Your Annual Cost per Mile

Cupped joints and corrugations are not damaging merely to the rail and rolling stock. They also are the direct cause of much damage to the *track structure itself*.

The tremendous shock of cars passing at normal speed over such bad spots causes breaks and rapid deterioration of foundations, loosens bolts and joints, throws track out of alignment.

Consequently, if such spots are consistently cared for and ground out *before* they develop to a serious stage the result is a direct saving of much of the repair work necessary on foundations, joints, realignment of track and replacement of ties.



The use of Reciprocating Grinders, therefore, not only insures longer life of rail, smoother running of cars, decrease of wear on car equipment by elimination of shocks, but by removing the direct cause for much of the damage to *track structures* it decreases instead of adding to the total cost of track maintenance.

That is the experience of the hundred or more companies that use these efficient machines.

## Railway Track-work Company

30th and Walnut Streets, Philadelphia

AGENTS: Holden & White, Inc., 343 S. Dearborn St., Chicago.



## The kind of information you can use *daily*—

Facts, thousands of facts covering every branch of electric railway construction, operation and maintenance, modern, reliable information based on the experience of four of the biggest electric railway specialists, information that will help you as it is helping thousands of electric railway men throughout the country this is the kind of material presented—in the

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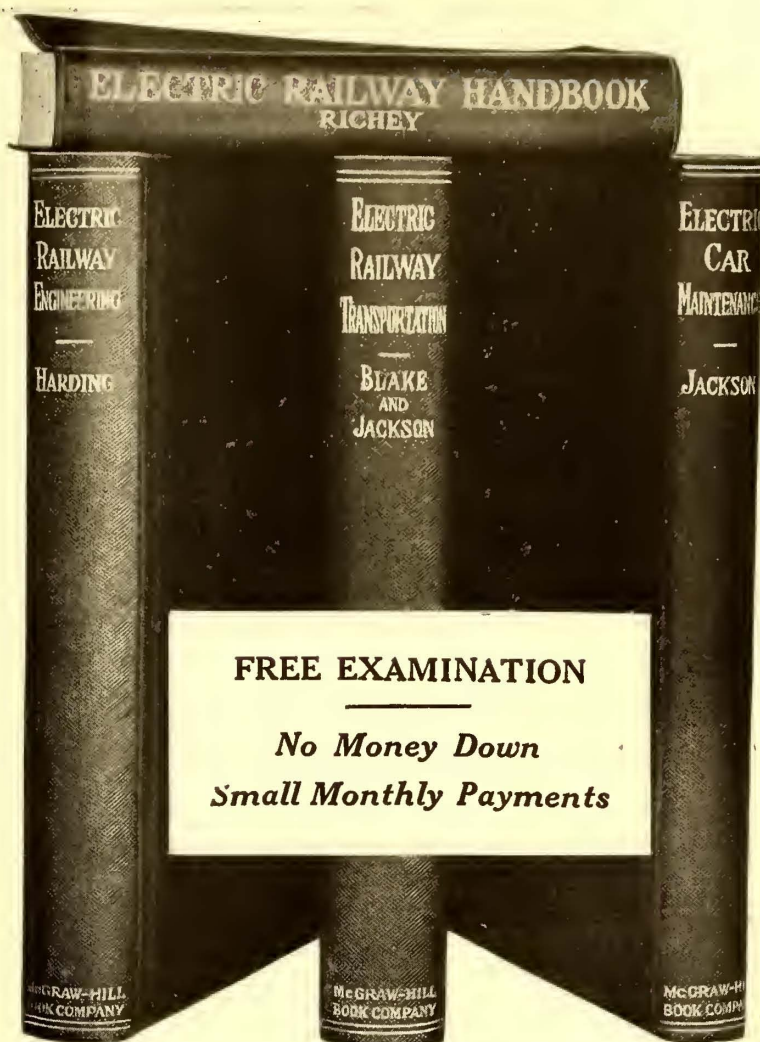
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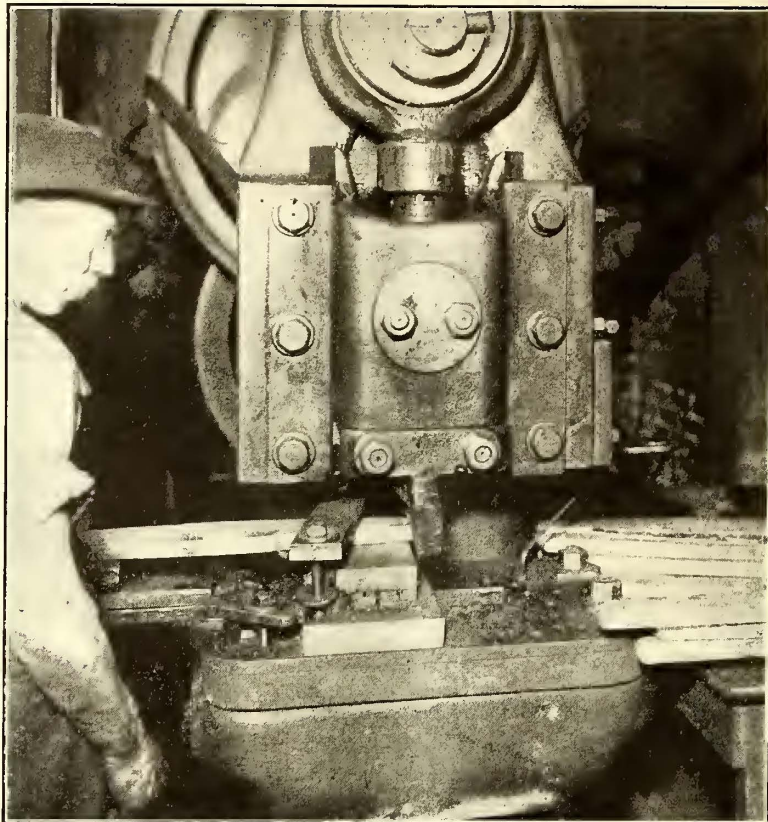
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# Columbia Brake Levers

## No. 3 *Squaring Off the Ends*

**A**FTER a hot time in the furnace and the forging by a 5-ton hammer, the brake lever is allowed to cool off. First, a template is applied to the brake lever to mark off its exact shape and then it is brought to a powerful press by means of which the bars are squared off as easily as a grocer slices cheese.

*Step No. 4 will show the rounding of the ends*

Don't let our "Brake Lever Movie" make you overlook other Columbians listed below

## Columbia Machine Works & Malleable Iron Co.

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Railway & Power Eng. Corp., Ltd., Toronto, Ont.

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Banding and heading machines  
Car hoists  
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Coil taping machines for armature leads  
Coil winding machines  
Pinion pullers  
Pit jacks  
Signal or target switches  
Tension stands

### CAR EQUIPMENT

Armature and Axle Bearings  
Armature and field coils  
Bearings (Axle and Armature)  
Brush-holders and brush-holder springs  
Brake, door and other handles  
Brake forgings, riggings, etc.  
Car trimmings  
Commutators  
Controller handles  
Forgings of all kinds  
Gear cases (steel or mall. iron)  
Grid resistors  
Third-rail shoe beams and accessories  
Trolley poles (steel) and wheels





# Collier Service

## at Savannah

A recent visitor to the car shops of the Savannah Electric Co. would have observed that this company was converting a number of open cars into closed cars for all-year-round operation to the new ship-yards.

and  
 advertiser had  
 effect in the cars  
 advises that they are  
 and states what cards are to  
 put in their place. Twice a year, in the  
 Spring and in the Fall, the railway com-  
 panies commence to substitute open cars  
 for closed cars, or vice versa. This is called  
 "transition period," and as the "transition  
 period" approaches the Home Office en-  
 deavors to arrange for the shipment of an  
 extra lot of cards to care for the large num-  
 ber of cars which will be operated, because  
 at times all the cars owned by the railway  
 are subject to operation and must, neces-

This, for example, shows that one of the most important items in Collier Service is to watch the comings and goings of the cars as regards their use at different seasons; and also to check carefully the reconstruction of cars, withdrawals and additions.

In other words, we very carefully maintain a continuous inventory of card spaces so that the user of space in Collier Service Cars will at all times receive full value from his investment.

By consistently following this policy, Collier Service has established that degree of confidence which assures to electric railways a permanent, stabilized income from car card advertising.

*Barron G. Collier*  
 INCORPORATED

Candler Building

220 West 42nd Street, New York City





### Every Noark Fuse gets the Third Degree

**M**OST tests are a matter of averages. One out of every hundred — or thousand — is chosen, and the others get by. If the average of those selected is high it is assumed that all must be good.

Not so with Noark fuses. Every Noark fuse — no exceptions — must pass the test, not one test, but many tests. In the Noark factory life for a fuse is one test after another.

What does all this mean to you? It simply means this: That buying a fuse with the Noark label on it is buying a fuse whose performance is known beforehand. And that is what you want to know about a fuse, and is just what makes a Noark fuse different from others.

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Manufactured by the Johns-Pratt Co., Hartford, Conn.  
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# NOARK

APPROVED  
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is **NOT** the *Best Lumber for ALL Railway Purposes*. For certain specific applications, however, in which railways have large lumber requirements, the use of all-heart Cypress develops very large *economies in maintenance costs*. For example, the Railway Signal Association in its standard specifications for wood to be used for "Trunking and Capping" has always placed all-heart Cypress among the first choices in the list of suitable woods.

The Railway Signal Association makes its recommendations as a result of definite *knowledge* of the subject, and its membership includes many able men who are Cypress enthusiasts. We gladly refer all doubters as to Cypress superiority to any well-posted railway engineer who has had experience with Cypress, "the wood eternal."

The same conditions of service which make Cypress superior for "Trunking and Capping" are present in many other railway lumber requirements, such as

# FENCING

and similar purposes where the material is exposed constantly to the weather, and where it is consequently essential that it shall be highly capable of *resistance to decay*. That is the great and particular value of Cypress—it is *highly resistant to decay*. (All-heart especially.)

If railway men in general will study the question of wood durability for other uses as carefully as Railway Signal men have studied it in connection with "Trunking and Capping," there will be a lot more all-heart Cypress used in railway service—to the *very great economy of the companies using it*.

*Our data is at your service.*

## SOUTHERN CYPRESS MFRS' ASS'N

1265 Hibernia Bank Building, New Orleans, La., or  
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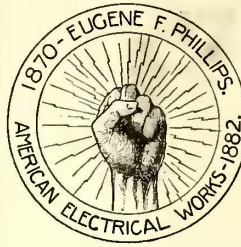


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UPPER MICHIGAN WHITE CEDAR

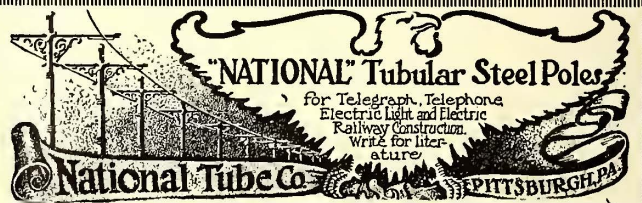
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**ACME** **NESTABLE**  
**CORRUGATED** **CULVERTS**

offer immense transportation and storage advantages over any full circle culvert. At the same time we'll ship them Set-up in full circle form if you so desire.

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MANUFACTURERS  
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TRACK SPECIAL WORK



**WE MAKE THIS GRADE ONLY**

**CLEVELAND FROG & CROSSING CO**  
CLEVELAND OHIO

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205 Broadway, Cambridgeport, Mass.  
Established 1858

Manufacturers of

**Special Work for Street Railways**

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Drew Motorman's Safety Mirrors—Prevent Accidents.  
Drew Pole Sleeves—Make Old Steel Poles as Good as New.  
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Drew Frogs and Crossings—Obviate "trolley off."  
Drew Clinch Ears—Absolutely dependable.

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Offices and Works, 1016 E. Michigan St., Indianapolis, Ind.



## Standard ALL-STEEL Fence Post Moulds

Seven Posts to the Bag of Cement

**STANDARD STEEL MOULD CO.**

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Write for Full Details Today

## TRAILS AND NELSONVILLE FILLER AND STRETCHER BRICK

offer all the advantages without the disadvantages of the groove rail.

Construction approved by City Engineers.

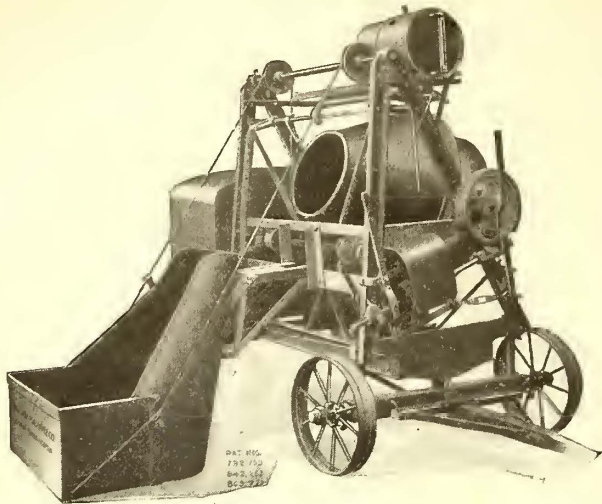
**THE NELSONVILLE BRICK CO., Nelsonville, Ohio**

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Tongue Switches, Mates, Frogs, Curves and Special Work of all kinds for Street Railways





### Jaeger Mixes Big Batches

There are a lot of advantages to an outfit that mixes concrete and then carries it to its destination. Such is the Jaeger Self-Contained Plant.

With this outfit you can mix a big batch of concrete perfectly. The discharge is quick and clean.

We will send a catalog for the asking.

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Crown  
United States  
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Export Representative: U. S. Steel Products Co., New York  
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### SPECIAL TRACK WORK

SWITCHES, FROGS AND CROSSINGS.  
ANTI-KICKING BIG HEEL  
SWITCHES.



TRACK WORK  
OF EVERY DESCRIPTION.  
HARD CENTER CONSTRUCTION.  
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Carnegie Steel Company was the first to manufacture

### Rolled Steel Cross Ties

in the United States.

It has given to their development that careful consideration and high technical skill which marks all its products.

The pamphlet—"Steel Cross Ties" may be obtained on application.

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995

The MODERN  
WAY of handling  
ASHES is by the



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Bulletin No. 1 Green Chain Grate Stokers.  
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Excavated by Lineal foot of trench.  
Special Equipment—Rapid Work—Saves Labor.  
Write for information.

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Automatic Safety and Automatic Return Switch Stands for Passing Sidings. Tee Rail Special Work for Interurban Lines and Private Right of Ways. Manganese Construction a Specialty.

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Plants at Hillburn, N.Y. and Niagara Falls, N.Y. New York Office, 30 Church Street

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A positive locking switch lock that locks right and left. Waterproof, non-freezable, mud-proof and sand-proof. Simple in construction, perfect in operation and easily installed. Positively prevents split switches.

Write for complete information and quotations.  
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85 Liberty Street, New York

## WATER TUBE STEAM BOILERS

Steam Superheaters

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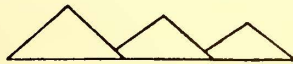
Works: BARBERTON, OHIO—BAYONNE, N. J.

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There are several grades designed and built especially for Railway Motor Service.

Backed by over a quarter of a century's engineering experience in brush design.

Built right for minimum maintenance costs.

Write for our Railway Brush Catalog.

**NATIONAL CARBON CO., Inc.**  
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We specialize in the manufacture of

**High Grade Motor and Generator Brushes**  
 For Railway Equipment

and for all other types of electrical machinery and are in position to make prompt deliveries.

**THE UNITED STATES GRAPHITE COMPANY**  
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## MACHINE TOOLS

COMPLETE MACHINE TOOL EQUIPMENTS FOR ELECTRIC RAILWAY REPAIR SHOPS

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## NILES-BEMENT-POND CO.

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Offices in Principal Cities

Full power with High or Lower Adjustment

Many emergencies requiring a powerful jack present a difficulty in bringing the jack to bear on the load. The

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saves time, strength and trouble. The many positions to which it is adjustable easily solve perplexing lifting problems. Full details in our catalog. Write for it.

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Greatly Increase Efficiency and Power of Steam Turbines.  
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A Chain Hoist that excels in every feature. It has Planetary Gears, Steel Parts, 3½ to 1 factor of Safety. It's the only Block that carries a five-year guarantee.

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Write for THERMOSTATIC CONTROL INFORMATION  
ELECTRIC HEATERS Cut Installation and Maintenance Charge.

# GOLD

VENTILATORS Also Ventilate in Stormy Weather.  
THERMOSTATS Save Current.

ORIGINATED the use of NON-CORROSIVE Wire for Electric Car Heaters.

ORIGINATED The Ventilated Coil Support.

LET US FIGURE ON YOUR NEXT REQUIREMENTS  
**Gold Car Heating & Lighting Co., 17 Battery Pl., New York**

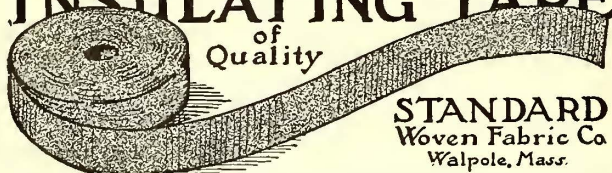
## The Kalamazoo Trolley Wheels

have always been made of entirely new metal, which accounts for their long life WITHOUT INJURY TO THE WIRE. Do not be misled by statements of large mileage, because a wheel that will run too long will damage the wire. If our catalogue does not show the style you need, write us—the LARGEST EXCLUSIVE TROLLEY WHEEL MAKERS IN THE WORLD.



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KALAMAZOO, MICH., U. S. A.

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for Railroads-Contractors-Industries  
Automobiles-Pole Pulling and Ordnance

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**IMPERIAL WELDING AND CUTTING EQUIPMENT**  
OXY-ACETYLENE PROCESS

Welds everything in metal—cuts anything in steel or wrought iron. Excels in Speed, Safety, Efficiency and Economy. Write for Free Catalog. The Imperial Brass Mfg. Co., 525 S. Racine Ave., Chicago

**"Everything in Insulation"**

Mica  
Vulcanized Fibre  
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Waxes  
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The above are only a few of our products  
Write us for anything in this line you may require.  
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The Big Three  
**D & W Fuses, Deltabeston Wire**  
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Use them in your terminals—  
**PEREY TURNSTILES**  
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*Faster than the ticket seller*  
**Perey Manufacturing Co., Inc.**  
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75% of the electric railways  
use  
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# JACKS

Barrett Track and Car Jacks  
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Duff Ball Bearing Screw Jacks  
Duff Motor Armature Lifts

**The Duff Manufacturing Co., Pittsburgh, Pa.**



## The subscription was discontinued because a "Want" Advertisement brought results

Editor—"We are sorry to lose your subscription, Mr. Jackson. What's the matter? Don't you like our politics?"

Mistah Jackson—" 'Tain't dat, sah; 'tain't dat. Mah wife jes' been an' dun landed a job o' wuk for me by advertisin' in youh darned ole papah."

If you're looking for a "job o' wuk" in the electric railway field—

—if you're looking for a competent man who will be able to handle a big or a little "job o' wuk" and who will bring RESULTS—

—there is no more efficient or economical method of securing either than the insertion of a card in the

### SEARCHLIGHT SECTION

Copy for "Want" and "For Sale" cards can be received on Wednesday for issue out on Saturday.

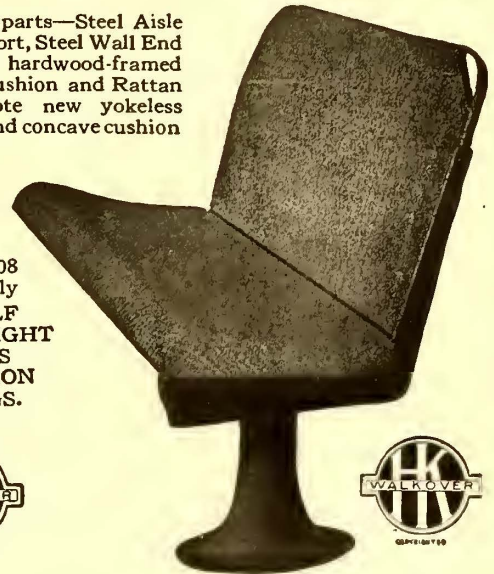
### ELECTRIC RAILWAY JOURNAL

10th Ave. at 36th St., New York

## Hale and Kilburn

No. 108, Concave Seat  
For One-Man and Other Cars

Only four parts—Steel Aisle End Support, Steel Wall End Support, hardwood-framed Rattan Cushion and Rattan Back. Note new yokeless pedestal and concave cushion



This No. 108 seat is only **ONE-HALF THE WEIGHT OF SEATS WITH IRON CASTINGS.**



## Hale and Kilburn Corp.

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## Heating and Ventilating

Let us demonstrate to you how we can heat and ventilate your cars at the lowest possible cost.

The Cooper Heater Company  
Carlisle, Pa.

## RAILWAY UTILITY COMPANY

Sole Manufacturers

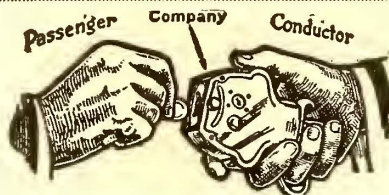
"HONEYCOMB" AND "ROUND JET" VENTILATORS for Monitor and Arch Roof Cars, and all classes of buildings; also ELECTRIC THERMOMETER CONTROL of Car Temperatures.

141-151 WEST 22D ST. Chicago, Ill. Write for Catalogue 1328 BROADWAY New York, N. Y.

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Show origin and destination of every fare collected as well as other valuable traffic data.

The Bonham Recorder Co., Hamilton, O.



Direct Automatic Registration  
By the Passenger  
Rooke Automatic Register Co.  
Providence, R. I.

## Consolidated High Grade Products

Electric car heaters—thermostatic control—pneumatic car door operators—buzzers, single-stroke bells, starting signal lights—special resistances.

CONSOLIDATED CAR HEATING CO. Albany New York

Hot Air — Hot Water — Electric

## HEATERS

Also Thermostatic Control

THE PETER SMITH HEATER CO., Detroit, Mich.

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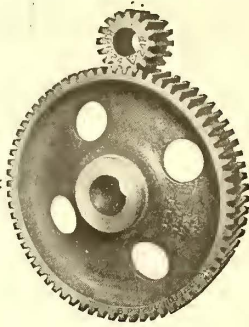
cars and station steps.

Universal Safety Tread Company  
Waltham, Mass.



MASON SAFETY TREAD—lead or carbonum filled; non-slippery; prevents accidents; cuts out damage suits.  
KARBOLITH CAR FLOORING—for steel cars; is sanitary, light weight, fire proof, non-slippery.  
STANWOOD STEPS—Self-cleaning, non-slippery, light.  
Our products used on all leading railroads, on cars and stations. For details address:  
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THE demand everywhere is for dependable service. It should be met.

Here's one way that will help. Install B P treated gearing on rolling stock, in shops or power plants and minimize breakdowns and replacements. B P will do it because it gives 4 times the life of untreated steel gearing in identical service.

The installation of B P will assist you in giving the kind of service that it is your desire to render.

**NUTTALL**  
PITTSBURGH L

## Holden & White Inc.

Electric Railway Sales Distributors for:

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## MORE-JONES

**V-K**

Using the V-K Oilless Trolley Wheel and V-K Non-Arcing Harp saves power and insures maximum conductivity with entire freedom from interruptions of current to the pole. It leads to improved service and longer wheel mileage.

Catalog on request.

More-Jones Brass & Metal Co.  
St. Louis, Mo.

**Oilless Trolley Wheel**

### "Boyerized" Products Reduce Maintenance

Bemis Trucks	Manganese Brake Heads
Case Hardened Brake Pins	Manganese Transom Plates
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Case Hardened Nuts and Bolts	Bronze Axle Bearings

Bemis Pins are absolutely smooth and true in diameter. We carry 40 different sizes of case hardened pins in stock. Samples furnished. Write for full data.

Bemis Car Truck Co., Springfield, Mass.

### UNION SPRING & MFG. CO. SPRINGS

COIL AND ELLIPTICAL

M. C. B. Pressed Steel Journal Box Lids

General Office: Fulton Bldg.

PITTSBURGH, PA.

Works: New Kensington, Pa.

50 Church St., New York. 1204 Fisher Bldg., Chicago, Ill.  
Missouri Trust Bldg., St. Louis, Mo.

It Pays to carry an advertisement in the ELECTRIC RAILWAY JOURNAL every issue of the year because you obtain proportionately better **Results**

### VAN DORN COUPLERS

are made for every condition and requirement. M. C. B. Pin and Link, Car and Air, in all sizes and types.

VAN DORN COUPLER CO.

2325 So. Paulina St., Chicago, Ill.



### Samson Bell and Register Cord

Solid braided cotton, extra quality. All sizes and colors. More durable, more economical and better looking than leather or rawhide. Send for samples and full information.

SAMSON CORDAGE WORKS, BOSTON, MASS.

### N-L INDICATING TAILLIGHTS HELP CARS MAKE BETTER TIME

Colored lights are notification to those following of the movement of the car's controller. Helps avoid rear-end accidents; avoids delays of cars behind. Used on leading railways.

THE NICHOLS-LINTERN CO.

Cleveland, Ohio, U. S. A.

### PROVIDENCE FENDERS H-B LIFE GUARDS

The Consolidated Car Fender Co., Providence, R. I.  
Manufacturers of The Providence Fender and H-B Life Guards

Wendell & MacDuffie Co., 61 Broadway, New York  
General Sales Agents.

### The "Hycap-Exide" Battery

for STORAGE BATTERY STREET CARS

THE ELECTRIC STORAGE BATTERY CO  
PHILADELPHIA



# SEARCHLIGHT SECTION

60 Tons  
**7-in Girder Rails**  
 P. S. Co. Section No. 238  
**HENRY LE VIS & CO.**  
 Commercial Trust Bldg., Philadelphia, Pa.

FOR SALE  
 3—400-kv.-a. Westinghouse, all insulated, self-cooled, out door type, single phase  
**TRANSFORMERS**  
 60-cycle, 25,000-volt primary, 2500-volt secondary. Delivery after July 15, 1918.  
 Alabama City, Gadsden & Attalla Ry. Co. Gadsden, Ala.

## RECEIVER'S SALE

of Rockland, South Thomaston and St. George Railway

STATE OF MAINE  
 Knox, ss. Supreme Judicial Court In Equity  
 Security Trust Company vs.  
 Rockland, South Thomaston & St. George Railway and  
 Waldo Trust Company

**85 lb. A. S. C. E. Relayers**  
 16,000 tons—with Angle Bars to match. Available immediate shipment and centrally located.  
 We positively own these Rails and offer same in carload lots and over.  
 25,000 tons—Relayers—sizes 25 lb. to 100 lb., in stock our Pittsburgh yards and vicinity.  
 Immediate shipment guaranteed, and prices very attractive.  
 Carload and less than carload inquiries and orders solicited.  
 Rails cut to length for structural purposes. Frogs, Switches, Bolts, Nuts, Spikes and all Accessories.  
**L. B. FOSTER COMPANY**  
 Park Building, Pittsburgh, Pa.

**CLEVELAND ARMATURE WORKS**  
 Cleveland, Ohio

**Everything in the Line of Repairs to Electrical Machinery**

Complete Armatures, New Armatures, Rewound Armature Cores, Armature Shafts, Armature Coils, Fields and Commutators.

Established 22 Years.

Under and by virtue of decree in the above-entitled cause made on the twenty-first day of June, 1918, and filed in the office of the Clerk of Courts, Knox County, Maine, the undersigned Receiver, being thereunto duly authorized and directed, will receive bids in accordance with the terms and conditions of said decree, bids to be received by the Receiver at his office, 414 Main Street, Rockland, Maine, not later than twelve o'clock noon,

**July 23, 1918**

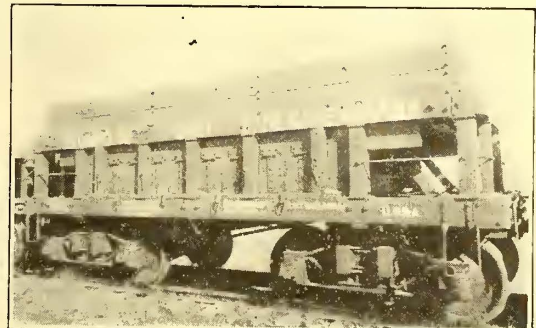
for the following property: All and singular, the real estate, buildings, road-bed, privileges, tracks, poles, lines, wires, material, machinery, equipment, tools, implements, supplies, property rights, easements, appurtenances and franchises, and all contracts and choses in action belonging to said Railway.

The aforesaid premises, property and franchises will be sold without valuation or appraisement. The Receiver will receive sealed bids for the property as an entirety or for any part or parcel thereof, as scheduled, with the right to reject any or all bids; each bid to be accompanied by a certified check for ten per cent. (10%) of the amount of the bid. Property will be sold free from all liens and claims of every character and of every name and nature whatsoever. No bid will be received by said Receiver from any person who shall not accompany his bid with a certified check for ten per cent. (10%) of the amount of the bid as a pledge and as part payment on account in case his bid is accepted. Deposits so received from unsuccessful bidders will be returned; that received from a successful bidder retained to be applied to the purchase price or forfeited in case the bid shall not be made good or the purchaser shall fail to comply with any order of Court relating to the payment for said property when and after said sale shall be confirmed; if sale not confirmed, deposit returned to bidder. Sale to be made subject to confirmation by the Court. Court reserves the right to re-sell the property in case the purchaser shall fail to make payments as required on confirmation of sale. Condition of sale more fully set forth in said decree, and title to be given in accordance therewith. All the above sold, condition and completeness as is; as seen and inspected; and as now located. By said decree all claims to said property and liens thereon are transferred to the funds derived from said sale, and the rights of all parties making such claims are to be adjudicated in the receivership proceedings and protected in the distribution of the funds. Brief schedule will be furnished by Receiver.

Dated at Rockland, Maine, June 21, 1918.

**S. THAYER KIMBALL,**  
Receiver

## Receiver's Sale of the ST. JOSEPH VALLEY RAILWAY



**25  
 Side dump  
 Ballast Cars,  
 just rebuilt,  
 66,000 lb.  
 with  
 sideboards,  
 24 yd.**

Have new boards, bolts, posts for all 25 cars. Standard gage; 24 ft. outside overall. Inside total, 17 ft. Degree incline, 45 per cent.; over body, 22 per cent. Incline bottom, 3 ft. Flat bottom, 11 ft. Width overall, 8 ft. 10 in.; inside, 7 ft. 11 in.; rail to top, 7 ft., inside, 3 ft. Rail to top floor, 4 ft. Independent dump. Doors, 16 x 28 in. Westinghouse brakes. Steps and Grab Irons all M.C.B., standard. Four doors each side. Tower steel couplers, 5 x 5 shank. Total wheelbase, 19 ft. 4 in., 33-in. cast wheels. 9 x 11 wood bolsters. National hollow steel brake beams. 8 x 10 malleable journal boxes. Weight, 21,500 lb. Truck wheel base, 5-ft. twin full elliptic springs hung inside. 4 1/2 x 8 journal brasses. Cars take 42 ft. radius curve, coupled M.C.B. Painted; fine condition. Cash price, \$650 each.

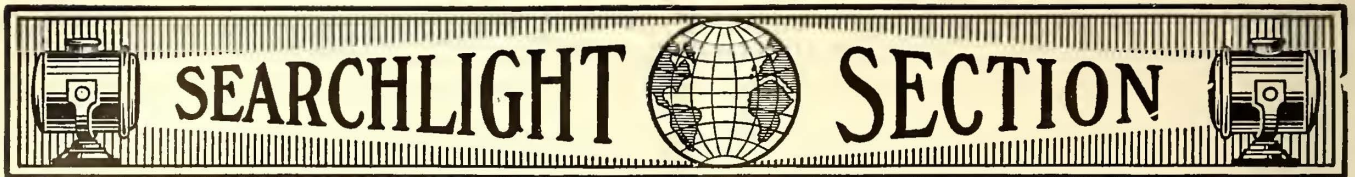
**ALSO**

- 1—Good three-compartment Trolley Car, G. E. 57, 4 motors, 55 ft. long.
- 1—Snow Plow.
- 1—Steel underframe Trailer.
- 1—Edison-Beach Storage Battery Car, 8 wheels, 55 ft. long, four motors, steel underframe, modern, fine shape.
- 1—All steel Hall Scott Gasoline Three-Compartment Car, 60 ft. overall, fine shape, full swing Janney couplers; \$7500. Act quickly.
- 15—Miles No. 9 hard drawn Copper Phone Wire, with porcelains and latest 50-A selective ringing Western Electric phones, with dispatchers, complete set for 15 station railway; has cabinet with more than 30 positions.
- 60—Miles Copper No. 10 Gage, with porcelains for immediate delivery, price 32c. a lb., Elkhart, Ind. Act quickly. Now selling.

Small way stations, car barns, scales, etc.

**H. E. BUCKLEN, Receiver, Elkhart, Ind.**





# SEARCHLIGHT SECTION

## POSITIONS VACANT

**CLAIM MAN**—I have an excellent all around claim man of good executive ability, capable of taking charge of claim department of average size, who must leave our climate account bronchial trouble; is on the job every minute; would like to hear from some one needing his services. P-192, Elec. Ry. Journal, Cleveland.

**TWO** first-class Taylor Stoker Operators wanted; \$4.50 per day of 8 hours with chance of advancement and good working conditions. Apply Hampton Power Plant, Hampton, Va.

## WANTED

### Machine Wood Workers and Coach Carpenters

Good wages. Permanent. State experience. **MOBILE LIGHT & RAILROAD CO.** Mobile, Ala.

## Rails

100 ton 7-in., 70-lb. Shanghai Relayers.  
125 ton 9-in., 90-lb. Girder Relayers.  
400 ton 60-lb. A.S.C.E. with angles. New.  
100 ton 65-lb. A.S.C.E. with angles. New.  
1000 ton 90-lb. A.R.A.-A., with angles. New.  
200 ton 100-lb., with angles. New.

Full Stock, All Weights.

### ZELNICKER IN ST. LOUIS

GET BULLETIN 237—70 BARGAIN PAGES.

## RATES:

1 inch—\$3.00  
4 inches— 2.90 an inch

*(The above rate applies to a 4-inch space in one issue, a 2-inch space in two issues, or a 1-inch space in four issues. The larger spaces following may be used up in a similar way.)*

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15 inches— 2.70 an inch  
27 inches— 2.60 an inch  
50 inches— 2.55 an inch

Rates for larger spaces furnished on application.

## POSITIONS VACANT

**CARBARN** foreman for Forth Mile Electric Railway in Massachusetts, state experience, salary expected and when ready to report. P-193, Elec. Ry. Journal.

**EXECUTIVE.** Man to take charge of operations of Interurban and Street railway, by railway and light company in middle West. Familiarity with lighting business preferred on account of extension of responsibilities. P-187, Elec. Ry. Journal, Chicago.

**MECHANIC** to take charge of barn on small Interurban and City property wanted. Must be able to handle all barn and shop work. P-190, Elec. Ry. Journal, Cleveland.

**AUDITOR** and office manager for small city and suburban electric railway in growing community. Must have experience in I. C. C. Classification and be a live wire. Give full details in first letter. P-191, Elec. Ry. Journal, Cleveland.

## POSITIONS VACANT

**WORKING** foreman for armature room wanted. Must be capable of winding all different types of street railway armatures. None but strictly sober man need apply. Please state salary expected. P-194, Elec. Ry. Journal, Philadelphia.

## POSITIONS WANTED

**GENERAL** auditor or secretary-treasurer; 15 years' experience railroad and street railway accounting. Thoroughly conversant with Interstate Electric Railway Accounting Married; age 40. Send for record and references. PW-172, Elec. Ry. Journal, Chicago.

**SUPERINTENDENT** of Rolling Stock and Master Mechanic now employed in charge of 350 city and interurban cars, for satisfactory reasons seeks opportunity to make a change. Married. Thoroughly experienced and can maintain equipment at high standard. PW-189, Elec. Ry. Journal.

**TRANSPORTATION**—Can handle your transportation department and get results; 14 years with large street railway; thoroughly familiar with every detail of street railway transportation; best of reference from present employer; age 38. PW-181, Elec. Ry. Journal, Philadelphia.

## AGENTS AND SALESMEN

**Salesman Wanted**  
Young man with engineering training, to sell steam and street railway track work. State salary expected and all details in first letter. AS-188, Elec. Ry. Journal, Chicago.

# These Pages

receive the attention of electric railway men everywhere. In every industry—in every form of electric service. Have you any proposition to put before these men? Anything to sell or buy that they may want or have? Whatever your message—

*Employment or Business Opportunities Offered or Wanted :: Plants, Properties, or Used Equipment For Sale or Wanted :: Bids Wanted for Furnishing Equipment or Supplies ::*

these pages—the “SEARCHLIGHT SECTION” of Electric Railway Journal will place your wants before over 8000 men. **TRY THEM!**



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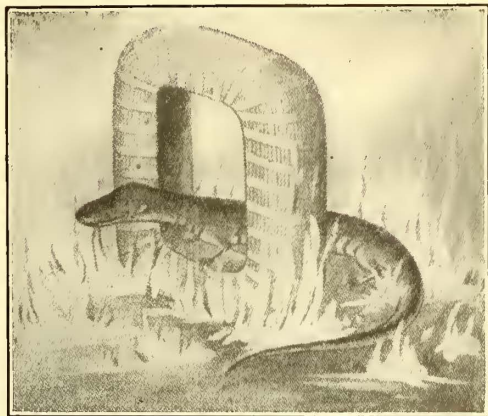
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**SEARCHLIGHT  
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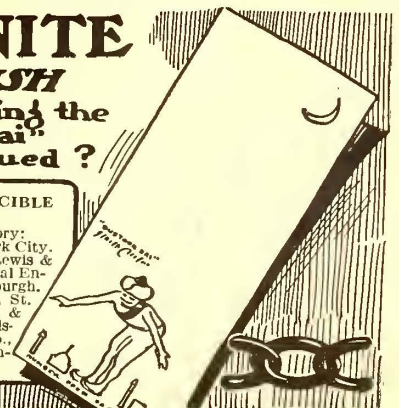
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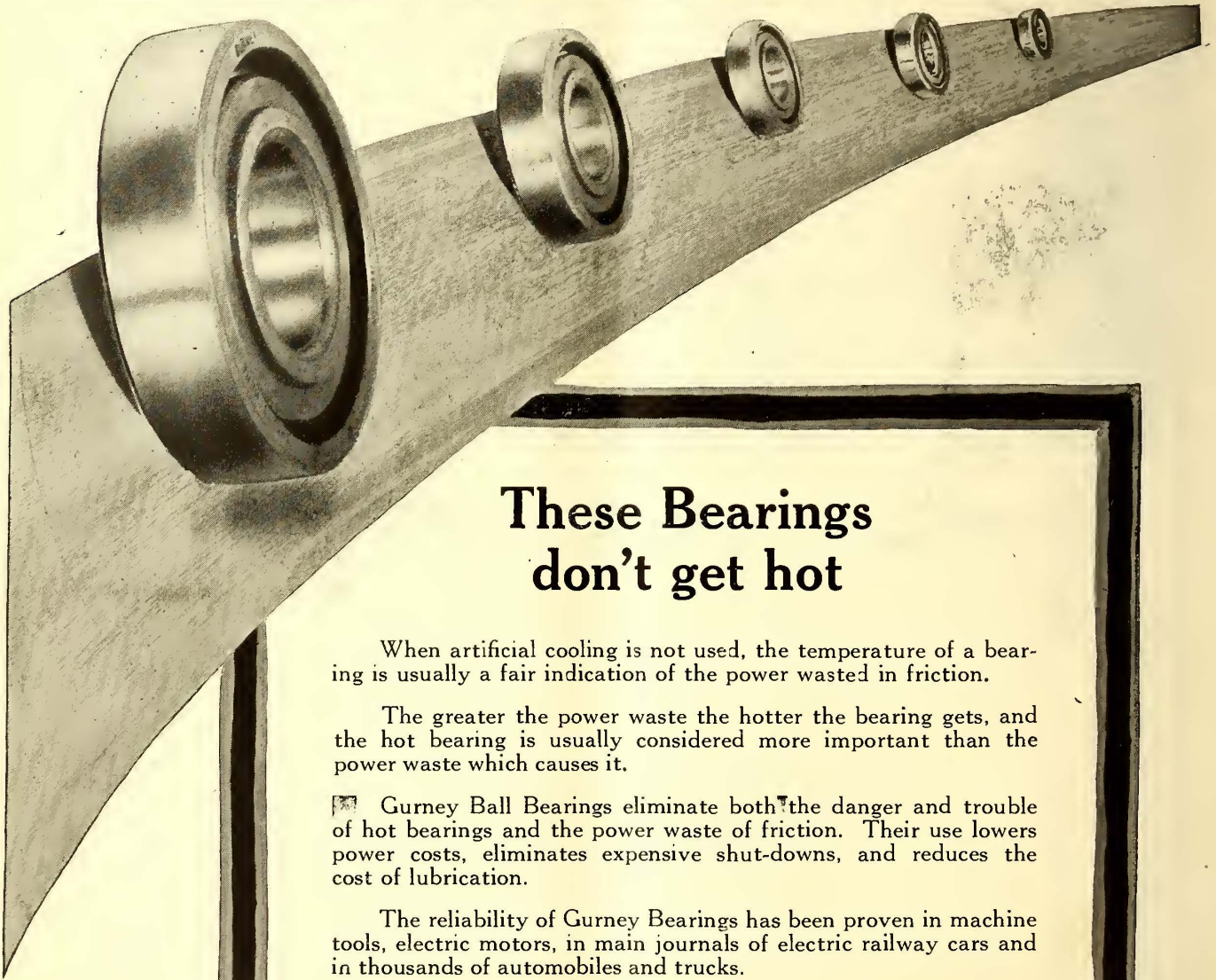


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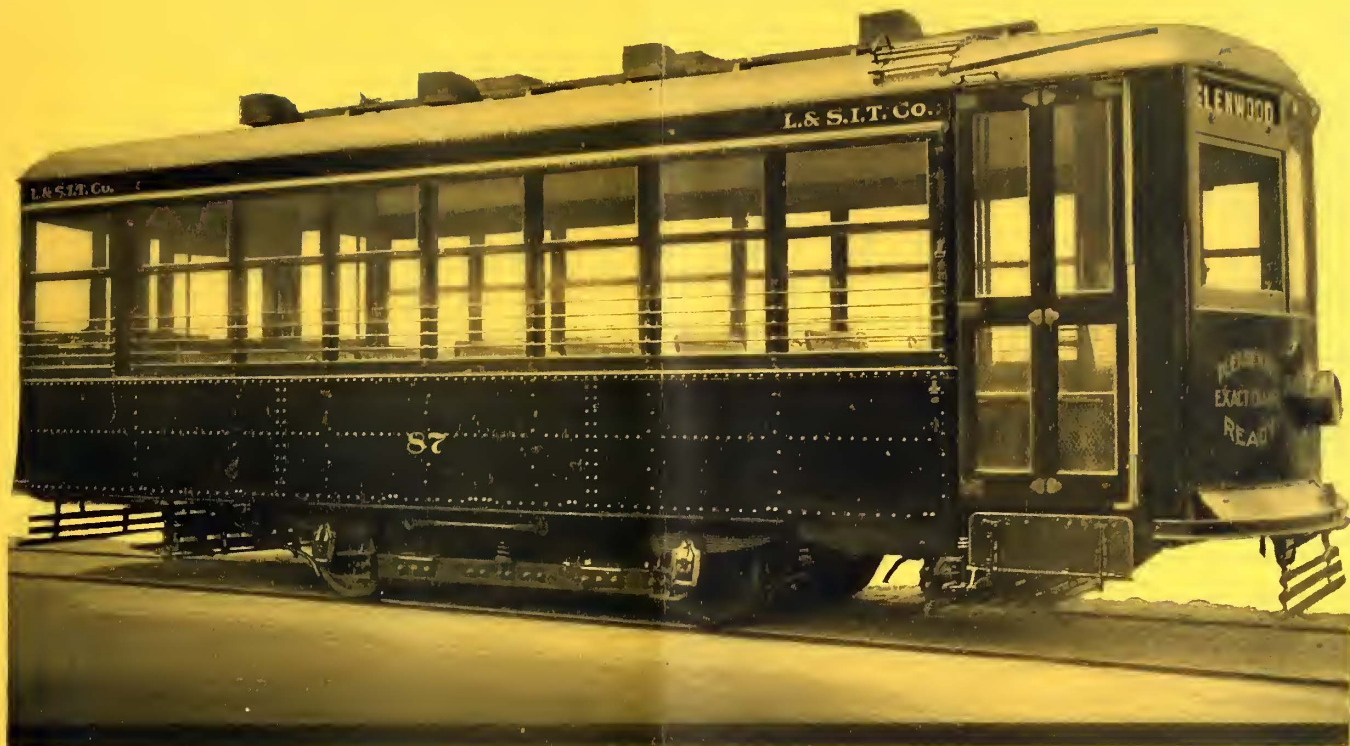
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