

# ELECTRIC RAILWAY JOURNAL

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## MILLER TROLLEY SHOES

Good will

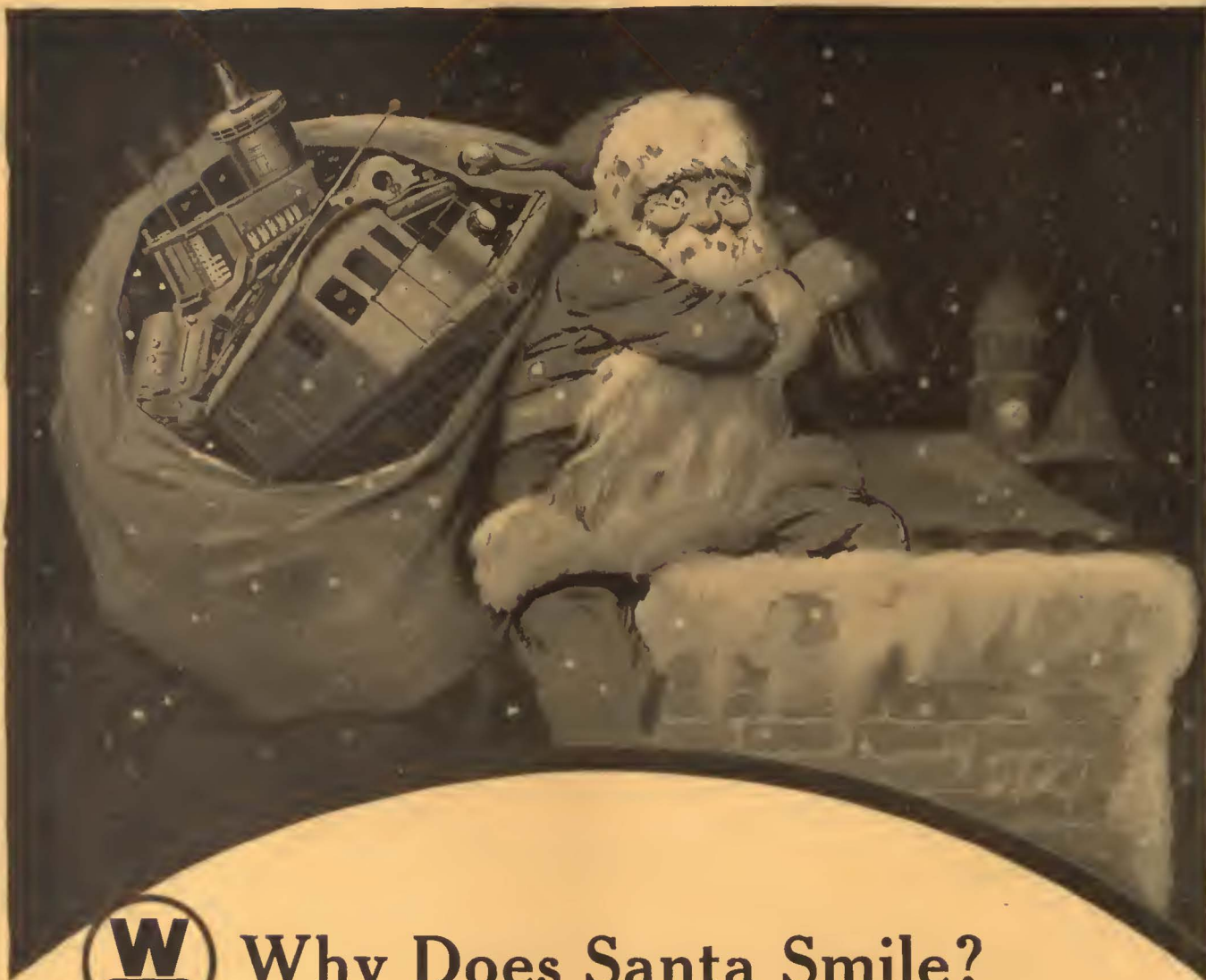
Not only the goodwill of the riding public, but the goodwill of everyone concerned, follows as a natural result of Miller Shoe performance.

The high capacity 3-in. contact surface glides over wire irregularities where a trolley wheel would jump and hammer—hugs the wire as no wheel ever could.

Miller Shoes stand proven as safer, more efficient, quieter than wheels; and show on test up to 60% more mileage with LESS wire wear.

MILLER TROLLEY SHOE COMPANY  
295 Columbia Road, Boston 21, Mass.

Western Representative:  
Economy Electric Devices Co., 1590 Old Colony Bldg., Chicago, Ill.



## Why Does Santa Smile?

He is a welcome visitor where e'er he goes, especially when his pack is filled with good things for the Electric Railway Industry.

The Westinghouse Electric Company joins Santa in wishing you the Season's Greetings.



Westinghouse Electric & Manufacturing Company  
East Pittsburgh, Pa.

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

# Westinghouse



# ELECTRIC RAILWAY JOURNAL

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Editorials .....1035

Modernize and Merchandize.....1037  
An interview with Britton I. Budd by Harry L. Brown, editor of the ELECTRIC RAILWAY JOURNAL, in which the president of the American Electric Railway Association clearly expresses his views on many of the vital problems affecting the industry today.

Eliminating Half the Accidents in El Paso.....1047  
In five years the cost of accidents was reduced from 15.7 per cent of gross earnings to 2.5 per cent. Gold stars for trainmen with clear accident records encouraged safe operation. A breakfast at 3 o'clock in the morning a feature in the campaign.

Company Helps Employees Buy Homes.....1050  
Legal and financial aid afforded. More than 75 per cent of the employees take advantage of the opportunity.

Traffic Increasing in Populous States .....1051

Interstate Starts Dining Car Service.....1053  
Comfort and luxury of the interior fittings and the wide variety offered by the menu are features of the combination club-dining-observation car service from Indianapolis to Louisville.

Coal Consumption Cut a Third.....1054

The Readers' Forum .....1055

Association News and Discussion.....1056

Maintenance of Equipment .....1059

New Equipment Available .....1060

News of the Industry .....1063

Foreign News .....1066

Financial and Corporate .....1068

Traffic and Transportation .....1071

Personal Mention .....1072

Manufactures and the Markets.....1073

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## "Take a Letter to the Industry"

AT THE END of a letter received recently, the general manager of a Pennsylvania street railway commented as follows:

"It would probably be interesting to you men on the JOURNAL if you could know of the private correspondence that results from articles which you print. This, in itself, is of considerable advantage, and if the JOURNAL did nothing more than to bring about in this way an exchange of views through correspondence, it would be a considerable contribution to the electric railway industry."

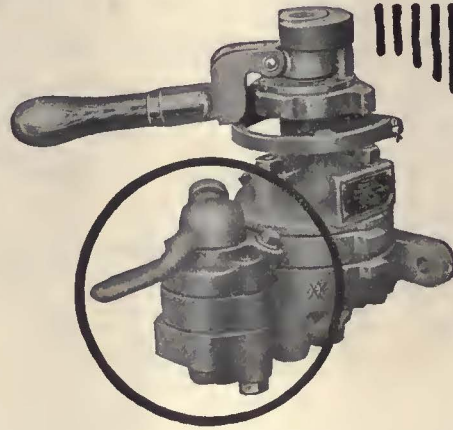
We have had knowledge that this has been one of the by-products from reading a publication which strives to keep the field informed of every advance made in the art.

And to make the consequent interchange of ideas of broader value, the JOURNAL has invited and urged men to address their letters of discussion to the entire field by writing them for publication in the "Readers' Forum" section. That invitation is again extended.





Showing Correct and Convenient Method of Passenger Interchange with Independent Door Control as Provided by the New SELECTOR VALVE.



The New SELECTOR VALVE as Incorporated in the Pipe Bracket of the Standard M-28 Safety Car Brake Valve.

## Solve the Door Control Problem

The use of double passageways on Safety Cars to facilitate passenger interchange is extremely desirable, but should be accompanied by independent door control. The Door Selector Valve, functioning in connection with the Standard M-28 Safety Car Brake Valve, provides this important feature, making it a simple matter to open or close either door independently, or both together, as occasion demands.

With the Selector Valve the operator is always able to regulate the flow of both streams of passengers in such manner as he finds best suited to the conditions of one-man operation.

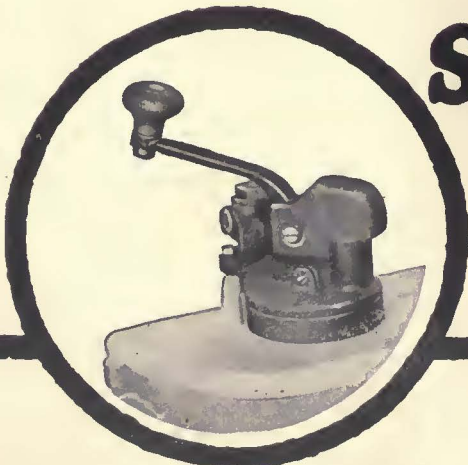
*Write for detailed information*

# SAFETY CAR DEVICES CO.

OF ST. LOUIS, MO.

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

CHICAGO SAN FRANCISCO NEW YORK WASHINGTON PITTSBURGH

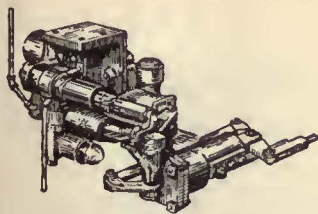


We furnish the Air Brake and Safety Car Control Equipment which *makes* the Safety Car





# There Is Keen Competition for the Use of City Streets



**THE VARIABLE  
LOAD BRAKE**

The Westinghouse Variable Load Brake has been developed to solve the problem of controlling cars under widely varying load conditions. It is an attachment which may be added to any straight air or semi-automatic equipment whereby the braking force is automatically adjusted to suit the weight on the car, by regulating the brake cylinder pressure as the weight changes.

The adjusting mechanism is thrown into engagement by the opening of the car doors. While the doors are open, passengers are leaving and entering the car, and when the doors are closed again, the condition of loading will be that under which brake operation will take place for the next stop, or a slow-down, as occasion may demand.

The use of the Brake insures stopping within a uniform distance regardless of whether the car is empty or loaded.

CITY streets have become so crowded that there is constant competition between the various elements of traffic for the right of way—a natural desire on the part of each “to get there first.”

In order to meet this condition and hold their own in the general traffic movement—to maintain satisfactory schedules—street cars must be as mobile as other conveyances which use the streets.

The Variable Load Brake is an effective means of increasing car mobility. By making it practicable to use additional motors for the purpose of higher acceleration, by reducing the average time required for stopping, and by cutting down the running time between stops by allowing longer periods of peak-speed operation, a general speeding-up of service results.

*Send for Publication T-2045*

**WESTINGHOUSE TRACTION BRAKE CO.**

General Office and Works: WILMERDING, PA.

# WESTINGHOUSE TRACTION BRAKES



# Save the Rail, Save All

You can't give good or profitable service on poor rails. Corrugated rails, battered joints, worn special work will wreck the whole track foundation. Every bump goes clear through.

Only a smooth track will cut track maintenance cost to the limit.

Moreover, only a smooth track will satisfy the public, prolong car life and make speed safe.

For a smooth track and all its advantages, keep your track grinders and welders busy. It pays.

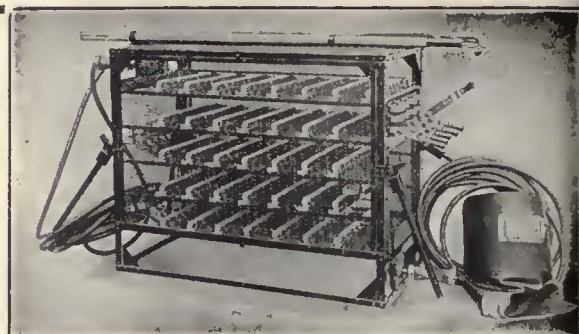
## Railway Trackwork Co.

3132-48 East Thompson Street, Philadelphia

### AGENTS:

Chester F. Gallor, 30 Church St., New York; Chas. N. Wood Co., Boston; Electrical Engineering & Mfg. Co., Pittsburgh; Atlas Railway Supply Co., Chicago; J. H. Doerr, Los Angeles; Equipment & Engineering Co., London.

(55)



"Ajax" Electric Arc Welder



"Universal" Rotary Track Grinder



"Atlas" Rail Grinder

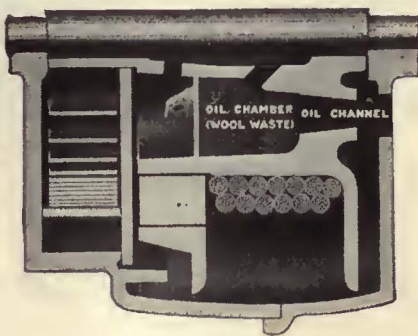
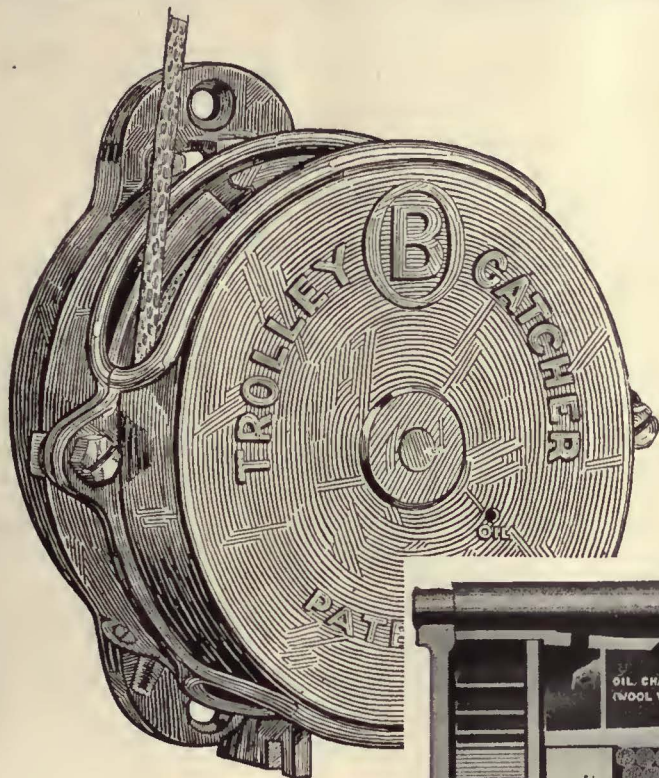


"Hercule" Ball Grinder



"Reciprocating" Track Grinder



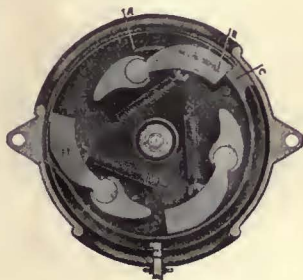


Section thru lower half of O-B Trolley Catcher showing Oil Chamber.

## Oil and the O-B Trolley Catcher

Oil in the O-B Trolley Catcher is simply an additional advantage in a good design, which in itself reduces friction to a minimum. Oil reduces wear in the O-B Catcher which would operate efficiently without oil.

Squirt the oil in the oil hole and the job is done. The chamber is packed with wool waste (note sectional view above) which retains sufficient lubrication for long periods of time.



The three dogs are thrown out when trolley jumps. One slides over guide (A-B) and engages stop C stopping flight of pole. Guide A-B is longer than distance rebound can back off the dog; hence no "stepping up" of pole.

The oiling scheme on the O-B catcher is effective both on the reel and on the latch dogs—and does not reach the rope.

O-B Catchers are standard on many properties. The addition of the oiling scheme adds popularity to an established favorite.

Each Catcher is packed in an individual corrugated container, effectively labeled and handy for the stock shelf.



**THE OHIO O B BRASS CO.**  
**Mansfield, Ohio, U.S.A.**

TROLLEY MATERIAL—ELECTRIC RAILWAY CAR EQUIPMENT—RAIL BONDS—HIGH TENSION PORCELAIN INSULATORS—THIRD RAIL INSULATORS

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**WEATHER FORECAST**  
**Sleet Storms and**  
**High Winds**



**Get ahead of emergency:  
 look around you now  
 and choose the  
 Western Electric House  
 nearest you**

Don't wait for the first big storm to threaten your lines. Order an emergency stock of supplies right now.

Everything electrical—from a roll of tape to an auto pole setting derrick—is available at our nearest House.

Your blanket order for whatever you need will receive prompt attention.

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 Company***

**OFFICES IN 47 PRINCIPAL CITIES**





**What Parts  
of Your Paved Track  
Have Permanent Value?**

The initial permanence of solid concrete construction with Steel Ties is satisfactory and costs no more and often less than other track designs. But developments of the past season have demonstrated that at the end of the useful life of the rail laid on such a foundation, new track can be put in without disturbing the old foundation. That a Steel Tie-Concrete Foundation will outlast at least two installations of wood ties, either in concrete ballast, or on stone is a demonstrated fact.

Ask for Delivered Prices and Complete Data.

*The*  
**INTERNATIONAL  
STEEL TIE CO.**

Cleveland  
Ohio

**Steel Twin Tie Track**



## Bates Poles on the New York, New Haven and Hartford Railroad

Bates standard poles are in use by the New York, New Haven and Hartford Railroad, one of the many electrification projects of which they are a part.

Simplicity of design, economical installation, permanent construction and low maintenance cost are features found in all Bates installations.

Practical Engineers from the Bates Company will be glad to confer in your own office with your engineering staff.

**B**ates **E**xpanded **S**teel **T**russ **C**o.

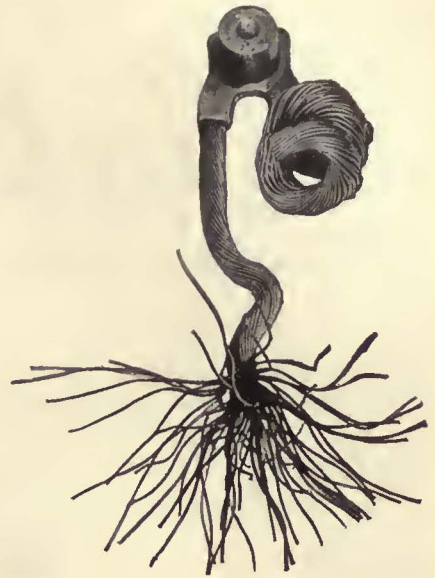
Illinois Merchants Bank Bldg.

Chicago, Ill., U. S. A.



**BATES** **ONE PIECE** **EXPANDED** **STEEL POLES**





# “PROTECTED” Rail Bonds *are truly flexible!*

—and that’s what you want most in a bond, isn’t it? Absolute flexibility is what insures longest life without cracking. Vibration and the wearing action at the joint will not crystallize these bonds.

Assembled of finest quality pure drawn ductile copper strands, closely wound. You can curl the connector back on the terminals as shown above without breaking a single strand. *This is flexibility.*

Terminals forged to shape in dies, using only best pure soft copper. They will not crack under compression.

These bonds are “protected” by the unique “shot-over” sleeve construction, where connector joins the terminal. This affords a shield against mechanical injury at this vital spot.

“Protected” Rail Bonds, literally by the million, are installed on electric railway lines of this Country.

Furnished in both compressed terminal and pin driven types.

**Rail Bonds  
Bonding Tools  
Bond Testers**

*Write for booklet and quotations.*



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# International

## The House of Quality and Service



### INTERNATIONAL PRODUCTS

Creosoted Cross Ties  
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 Creosoted Mine Timbers  
 Creosoted Wharf Timbers  
 Creosoted Piling  
 Creosoted Lumber  
 Creosoted Barge Sheathing

*Address all communications to  
 general office at Galveston,  
 Texas*

**F**IFTY years of experience stands behind International Products. During this time International has accumulated a vast store of knowledge in the science of timber selection, timber handling and timber treatment.

This experience, mounted on a solid, businesslike operating policy which is founded on the principle of "*What's Worth Doing at All Is Worth Doing Well*" and further backed up by efficient plant facilities, gives you a service that cannot be surpassed—and one that warrants your careful investigation.

International Ties are good Ties and do stand up in service. That's why we identify them permanently with the I. C. C. Co. Dating Nail.

Contract now for International Ties, so that we can carefully accumulate them, season and deliver them exactly where and when you need them.

### International Creosoting & Construction Co.

General Office—Galveston, Texas

Plants: Texarkana, Texas      Beaumont, Texas  
    Galveston, Texas







## This big modern manufacturing plant exclusively for N. P. Devices

Twenty years experience, covering the development, perfection and manufacturing of door and step operating equipment has culminated in a plant and organization so specialized as to produce efficient equipment and practical equipment;—equipment, which is better and cheaper than anything you could turn out in your own shops.

### NATIONAL PNEUMATIC EQUIPMENT

- DOOR ENGINES
- DOOR AND STEP CONTROL
- OPERATING MECHANISMS
- MOTORMAN'S SIGNAL LIGHTS

## NATIONAL PNEUMATIC DOOR ENGINES

have many points of superiority.

#### Minimum Air Consumption:

- No waste due to leakage.
- Automatic lubrication keeps cups in good condition.
- No packing glands.
- Minimum amount of waste space at end of cylinders and in piping.

#### Permanency:

- All parts extra strong and rigid.
- Large bearing surfaces.
- Enclosed rack and gear keep out all dirt.
- Hard drawn manganese bronze valves.

#### Uniform Operation:

- Non-adjustable cushion.
- Reserve cushion prevents slamming under all conditions.
- Cushioning period regulated by positive mechanical action.

#### Low Cost of Maintenance:

- No packing glands to be repacked.
- Non-adjustable cushion.
- Automatic lubrication.
- Large self-lubricating bearing surfaces.
- Rack and gear enclosed.
- Hard drawn manganese bronze valves prevent wear.
- Periodical overhauling expense low as engines are self-contained and self-aligning.

#### Small Space Required:

- Engine small and compact.
- Self-contained.
- Self-aligning.

#### Automatic Lubrication:

- Central splash system of oiling.

#### Reserve Cushion:

- Prevents slamming under all conditions.

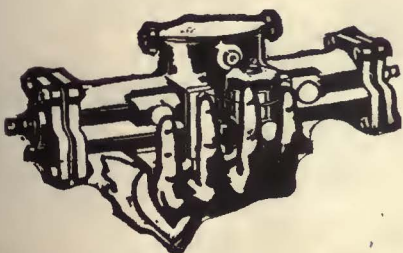
## National Pneumatic Co., Inc.

Originators and Manufacturers

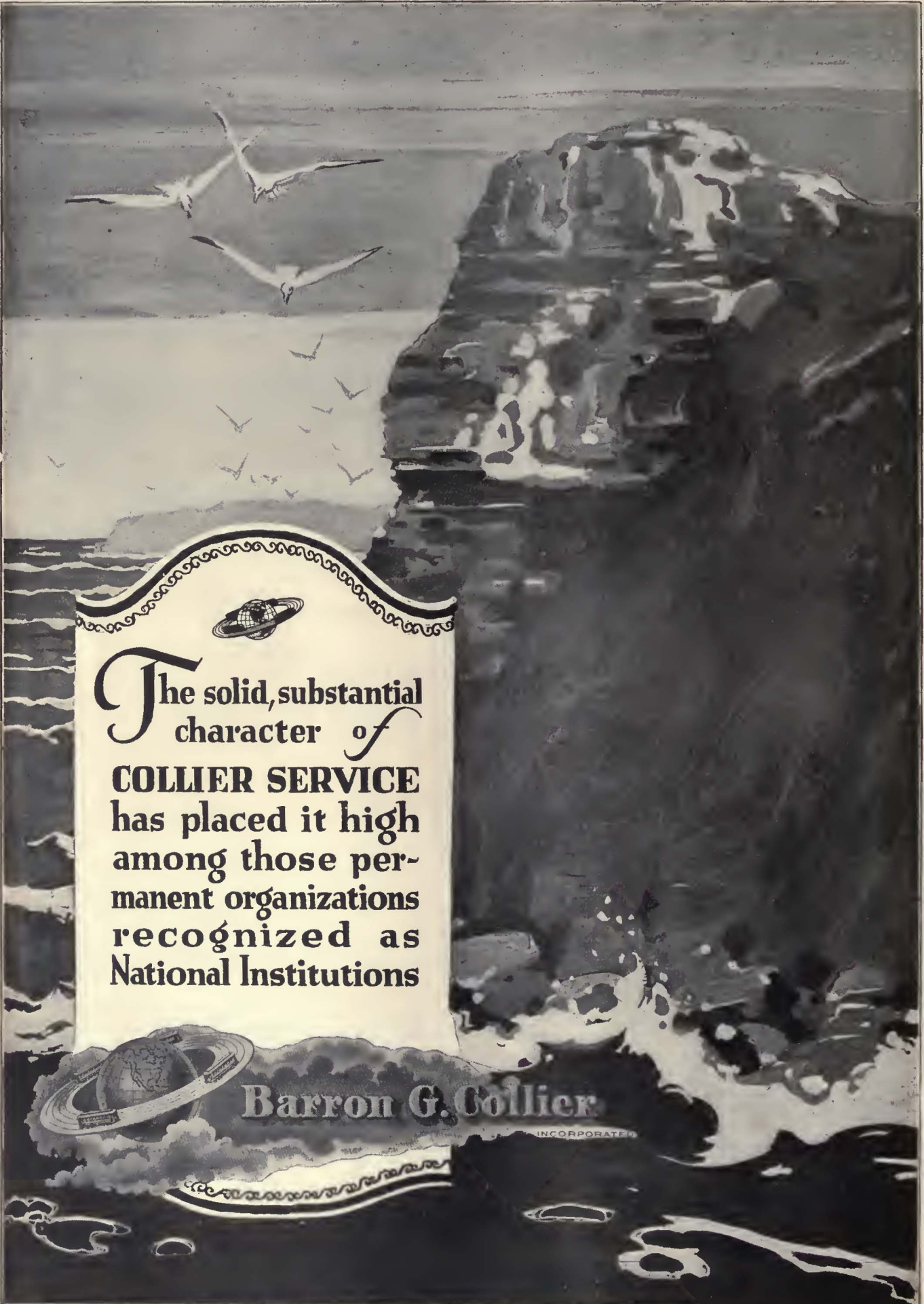
Principal Office: 50 Church Street, New York

Philadelphia—Colonial Trust Building Chicago—McCormick Building  
Works—Rahway, New Jersey

Manufactured in Canada by Dominion Wheel & Foundry Co., Ltd., Toronto, Ont.







The solid, substantial character of **COLLIER SERVICE** has placed it high among those permanent organizations recognized as National Institutions



**Barron G. Collier**

INCORPORATED



# There are three kinds of fires

*And protection against one kind is not necessarily protection against the others*

**Y**OUR plant may be as well protected against fire as modern science can make it. You may be one of the few who have exactly what a fire protection engineer would recommend. But—are you sure about it?

From the protection point of view, fires can be divided into three classes: fires in ordinary combustibles; fires in "extra hazardous" inflammables like oil, paint and grease; and fires in live electrical equipment of high voltage.

*There is no one extinguishing method adequate for all these fires.* What works well in one emergency may fail in another. That is why so many plants are destroyed despite the presence of "fire extinguishers" of one kind or another.

*Ask a fire protection engineer whether you are fully covered*

The men who represent Foamite-Childs Corporation are equipped to advise you scientifically and without prejudice on the best method of protecting your property. Behind them is a great manufacturing plant where specialists in practical fire-fighting produce *every kind* of chemical extinguishing device and system.

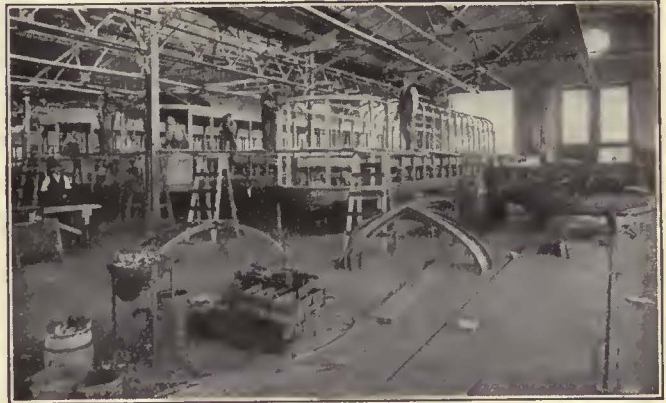
If your fire risks are well covered by your present equipment, a Foamite-Childs man will tell you so. If not, he will recommend a specific installation of one of the methods described below.

FOR BURNING OIL, PAINT, CHEMICALS, and other "extra hazardous" risks, *Foamite* Protection is supremely effective. *Foamite* equipment throws over any burning surface a blanket of carbon dioxide gas bubbles (known as *Firefoam*) that smothers the fiercest fire. Available in portable hand extinguishers, portable engines, and large stationary systems.

FOR ELECTRICAL FIRES, the *Fire-Gun* is always efficient. Its non-conducting stream stifles combustion in live electrical equipment. Adopted as standard equipment by many leading railroads and public utilities. Widely used for protecting automobiles and trucks.

WHILE FOR ORDINARY RISKS, *Foamite* equipment is the best protection. Where *Soda-and-acid* apparatus is selected, *Childs* extinguishers and engines have been standard for 27 years.

WHERE IT'S VERY COLD, the *Allweather* non-freezing extinguisher functions perfectly, down to 40° below zero, on ordinary fires.



Extra precautions are required in shops and store-rooms where ordinary fire risks are combined with such special hazards as oil and paint. Here *Foamite* Protection alone is adequate.



Where conditions necessitate housing high-voltage equipment in a frame building, the electrical fire hazard demands primary attention. *Fire-Gun* is the ideal, sure protection in this case.

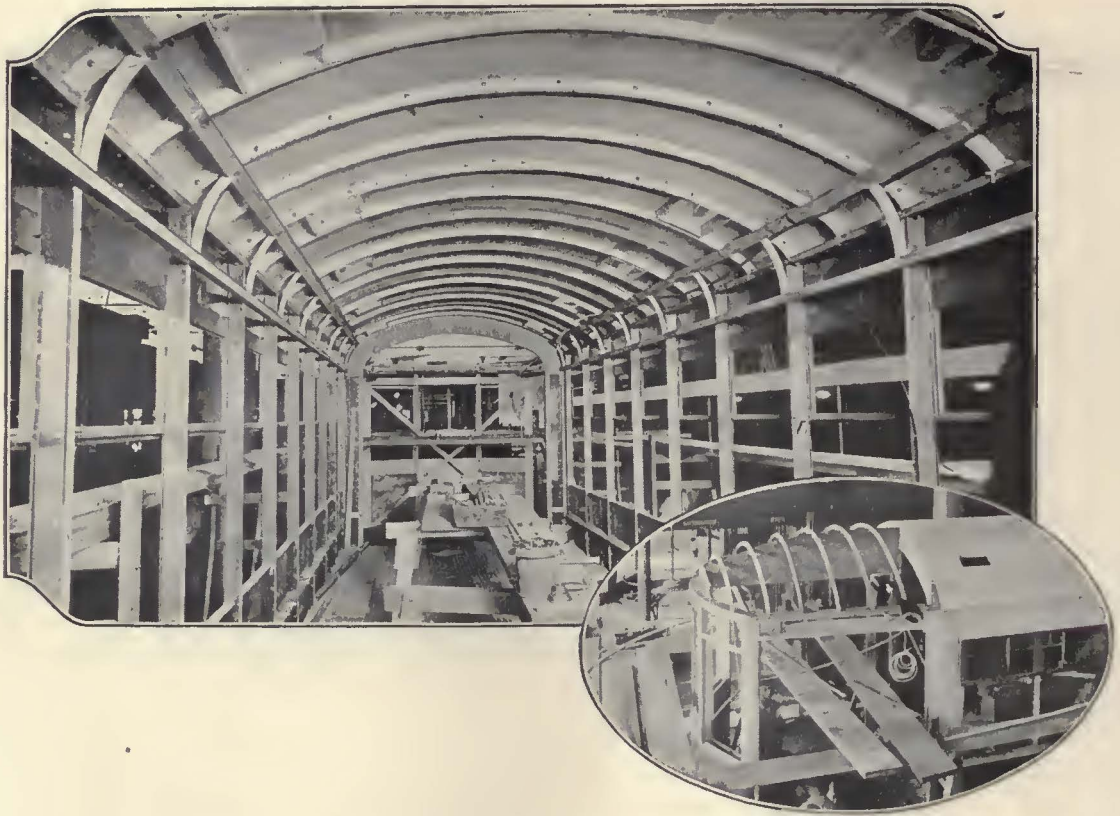
Our many division offices located at convenient centers enable us to reach any plant with this personal service for analysis of risks. Write us if you would like to have a representative call. He will furnish rough estimates without obligation to you.

Send for a free copy of the illustrated booklet, "The Essentials of Self-Protection Against Fire." It analyzes the fire hazards that threaten different industries and points out what specific methods are best to protect *your* risks.

## Foamite-Childs Corporation

Fire Protection Engineers and Manufacturers  
 126 Turner Street, Utica, N. Y.  
 Foamite-Childs of Canada, Ltd., Toronto, Ont.  
 Sales and Engineering Representatives  
 in the leading cities of all countries

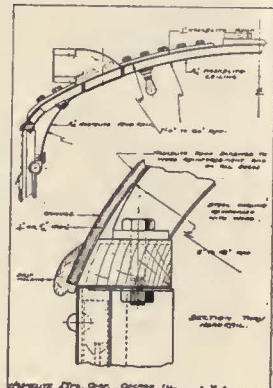
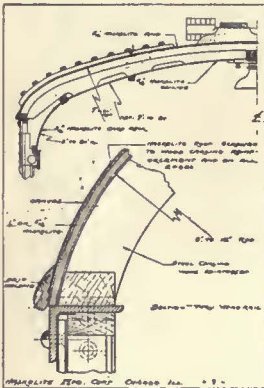




*For sturdy, lightweight construction*

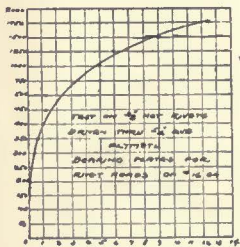
# HASKELITE

offers an engineering material of well-known structural properties. Its use simplifies construction details. HASKELITE roofs, for example, eliminate the time-wasting cutting and fitting of matched tongue-and-groove. Accurate time records show that labor hours are cut in half by HASKELITE. Moreover, the finished roof is lighter and more durable. Considered from every standpoint the HASKELITE car or bus roof is a distinct improvement over conventional wood or metal constructions.

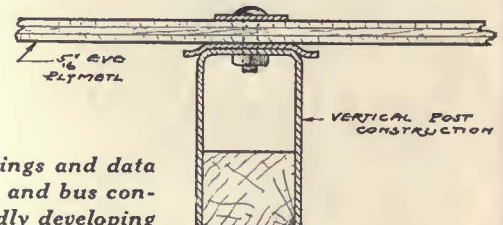
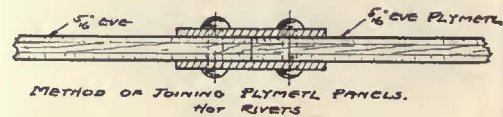


# PLYMETL

is HASKELITE with steel exterior. For side panels, it furnishes excellent heat insulation, is proof against indentation, and properly painted is handsome, strong and lasting. Notice the graph at the left giving the results of tests made on hot rivets in PLYMETL.



PLYMETL SIDE PANELS:



Remember the new booklet, containing working drawings and data covering the use of HASKELITE and PLYMETL in car and bus construction. You will want to be informed on this rapidly developing use. Send for your copy now.

Haskelite Manufacturing Corporation, 133 W. Washington St., Chicago, Ill.





# Electric Railway Lubrication

## Getting the whole story

At the expiration of a Galena Contract, a certain street railway company, operating about 125 cars, was induced to install lubricants of lower price, represented to be equal to Galena Oils in serviceability. As Galena performance on the road was a matter of record, it was decided to check carefully the performance of the new oils with these figures, to get an accurate service comparison.

It was found that for the twelve months during which these oils were used, the actual cost of the lubricants for all equipment was \$142.00 less than Galena guarantee contract prices for the same units of service—BUT

The records showed that hot journals per 100,000 car miles had increased 500 per cent over the registered Galena performance; hot armature bearings 50 per cent, and hot axle bearings more than 600 per cent per 100,000 car miles.

The initial saving in the cost of the oils amounted to less than  $\frac{1}{4}$  of the additional expense incurred in the labor and repairs incident to this lower service efficiency, without counting the value of the time equipment was out of commission.

Needless to say, the outcome of this check-up resulted in Galena displacing the other lubricants and the former efficient service is again in evidence.

An example that proves the wisdom of getting all of the facts—not part of them. Consideration of service returns, as well as purchase price of oils, is necessary to determine lubrication economy.

*"More miles to the pint;  
Better service to the mile."*



## Galena-Signal Oil Company

New York

Franklin, Pa.

Chicago

and offices in principal cities







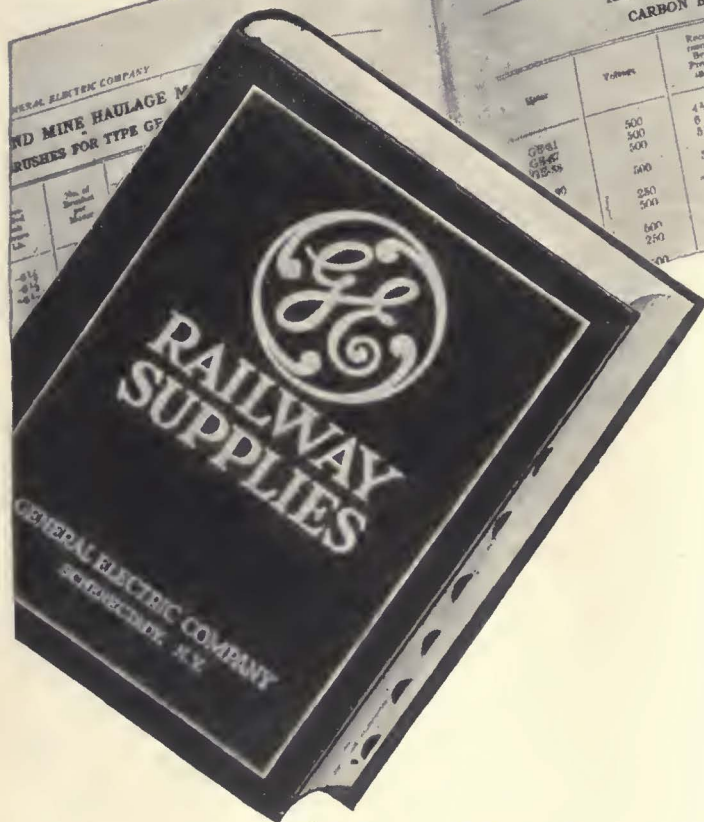
GENERAL ELECTRIC COMPANY

RAILWAY AND MINE HAULAGE MOTORS  
CARBON BRUSHES FOR TYPE GE MOTORS

CHARACTERISTICS OF BRUSHES

Motor	Voltage	Recommended Brush Pressure at 125%	No. of Brushes per Motor	Length	Width	Thickness	Cat. No.
500	4 1/2-5	8-12	2	2 1/2	3/4	3/16	11347
500	6-6 1/2	8-12	4	2 1/2	1 1/4	3/16	42911
500	8 1/2-9	8-12	4	2 1/2	1 3/4	3/16	34070
200	3 1/2-4	8-12	2	1 1/2	1 1/4	3/16	42912
250	4-4 1/2	8-12	2	1 1/2	1 1/4	3/16	10723
500	4-4 1/2	8-12	2	1 1/2	1 1/4	3/16	717413
600	4 1/2-5	8-12	2	1 1/2	1 1/4	3/16	100374
250	4 1/2-5	8-12	2	1 1/2	1 1/4	3/16	34070

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New York, Saturday, December 22, 1923

# Electric Railway Journal

*Consolidation of Street Railway Journal and Electric Railway Review*

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HENRY W. BLAKE and HARRY L. BROWN, *Editors*



## Remedial and Other Measures for Unraveling Traffic

EVERY city has a traffic problem these days. This fact is generally recognized by most every one, and there is unanimous agreement that something ought to be done about it some time by somebody. Ask any city official what he thinks about traffic congestion. "Isn't it awful," he will say. "But what can we do about it? The streets of this city were not laid out to meet the demands of modern conditions." As far as that goes, none of our cities was laid out to cope with such a situation as exists today.

But that does not mean that nothing can be done about it. There are several remedies available if any one has the courage to try them and to see them through. The trouble often is that as soon as a little opposition develops against any particular plan its proponents weaken and the plan is abandoned or the regulations are not enforced.

It is not necessary to solve the traffic problem for the next ten years at a single stroke in order to get some relief. One step at a time is enough. The thing is to make a beginning. An anti-parking regulation, a one-way street rule, the prohibition of left-hand turns—all these are helpful if enforced. Parking limited to thirty minutes or an hour has generally proved unsatisfactory, as this regulation is easily evaded though it does help some. Complete anti-parking in the business district is really necessary, however, to get any substantial relief. Even then the loading and unloading of trucks and wagons offers considerable obstruction to the free flow of traffic and it may be necessary to limit such use of the street space to the light traffic hours.

In all measures of traffic control the railways should make certain to have a voice, for their interests are those of a considerable proportion of the population. These interests extend beyond the streets on which cars are operated. Often a measure for expediting traffic on one street, or at least with that as its object, may seriously impede vehicular movement on another street.

An example of this is the block signal system installed recently on Michigan Avenue, Chicago. On that boulevard it has brought about a more orderly movement of automobiles and has no doubt contributed to safety. But it has slowed up the speed of vehicles along Michigan Avenue so that many drivers leave the boulevard and take to Wabash Avenue and State Street, the two adjacent parallel streets, as they can make better time. It is said that if you ask a driver of the Yellow Cab Company—the concern which paid for the installation of the signals in Chicago—to get you somewhere quickly, he avoids Michigan Avenue. It is also amusing gossip in Chicago that the signals so slowed up traffic that the Yellow Cab Company got back the cost of the traffic towers the first day they were in operation. Of course this is not true, for the taxi

meters run up faster on a distance basis than on a time basis if they have free running, and faster running was what was hoped for as the result of installing the towers.

This shifting of traffic to Wabash Avenue and State Street is now seriously interfering with the movement of street cars, particularly on Wabash, which is an exceptionally heavy rail route. This illustrates how vitally interested the railway company is in all traffic control measures. It is as competent as any one to judge of the suitability of a proposed measure and it should be prepared to take the lead in a constructive effort to improve the situation generally.

## A Constructive Talk to the Industry

RECURRING all through the interview with the new president of the American Electric Railway Association, published in this issue, are suggestions urging improvement of electric railway facilities and operation, and better methods of selling the service. Modernize and merchandise—these are his principal messages. They represent the two major opportunities of the electric lines today. Both are closely coupled, however, with the matter of building good will, which seems ever to be to the forefront in the mind of Mr. Budd in any consideration.

The railway that is doing things, he has found, is the one whose business is growing. That is borne out by experience the country over. The road that has "gone to seed" loses all attraction to people, who then ride only as necessity requires. On the other hand, with aggressiveness and a true spirit of service in evidence, a railway can create new riding; that is, more rides per capita.

The interviewer's admonitions, in a plea for old-time enthusiasm in embracing and developing new kinds of service and new kinds of traffic, are well taken with respect to the spirit of many managements, though it has been encouraging to observe that there has been a notable change in some quarters during the past year. No doubt this more active interest will spread rapidly this next year and beyond as more and more roads show black figures on their balance sheets. Particularly is this true in view of the impetus that Mr. Budd's administration will give to these matters. It is to be regretted that there has not been greater courage and more aggressiveness in utilizing the improvements which have become available. These would have contributed materially to an earlier return of prosperity to roads that are still struggling along in red ink. As a matter of fact, the most readily available means of placing most roads on a satisfactory earnings basis is the extensive adoption of such modern practices as one-man operation, use of light-weight cars, automatic substations, and other economy measures.



### Signs Should Explain Irregular Operation of Cars

FEW things annoy the average man more after waiting for a street car than to have the first one go by him without stopping. This annoyance is mitigated but little even when the destination sign is marked "Special" or "No Passengers." That there are sufficient other cars on the street to carry the passengers has no weight with the car-riding public. Neither does the contention that the following car will get the passenger to his destination almost as quickly as the first one would have. The mere fact that a car goes by him without stopping while he is waiting for transportation is cause enough for ill temper. This the railway should spare no reasonable pains to avoid.

There are several reasons why it may not be desirable to have a car carry passengers on a particular trip, as any transportation man knows. Frequently, however, investigation will show that more trips of this sort are run than necessity demands. A defective car that is bound for the carhouse should carry a sign with some such wording as "Car out of order" rather than a "special" sign, which carries vague meaning if any to the man on the street corner.

Cars pulling out of the carhouse or going back to it frequently can carry passengers to advantage on the way to or from their regular routes. But this calls for the use of some sign wording more meaningful than "Carhouse," "Barn," "House," etc. To have a sign of universal application would make this wording difficult, but in so far as cars are operated continuously from one carhouse, a single sign for them can be given some such wording as "Irving Carhouse via 10th St."

Even if it is the policy of the management to carry passengers on irregularly operated cars where possible, much follow-up work is necessary to see that the orders in this respect are enforced.

### Safety Stops for the Railway or Common Sense for the Motorist?

AN IMPORTANT question is raised by the action of the New York State Bureau of Highways in asking that the Public Service Commission compel the cars of the Hudson Valley Railway to come to a full stop before crossing one of the state highways. The reason given for this request is that the automobiles crossing the intersection daily outnumber the interurban cars.

If no better argument than this can be advanced in behalf of the proposal, it hardly merits very serious consideration. The disastrous wreck on Dec. 9 of the Twentieth Century Limited, which resulted indirectly from an accident at another grade crossing in New York State, serves to emphasize the meaning of such a proposal as that made by the Highway Bureau. How ridiculous it would be to propose that one of the crack trains of the country be required to stop at every important grade crossing. That of course is the *reductio ad absurdum* of the bureau's proposal, but it falls within the same principle that the bureau would apply to the Hudson Valley Railway. Obviously the question is not a matter of the relative number of vehicles.

Grave doubts may well exist concerning the ultimate benefit in the direction of public safety which would follow the adoption of the policy sponsored by the New York State Highway Bureau. If one highway crossing is made a safety stop, why not every highway crossing? This would result in a situation intolerable and

most unjust to railway passengers, and dangerous even for the motorists, for it would tend to make them more careless than at present. Their best safeguard is in their own caution. A special situation may exist to make desirable a safety stop at a particular point, but the mere fact that automobiles are more numerous than the electric railway cars is not a sufficient reason. This is said of course on the assumption that the railway has used every reasonable means of safeguarding its operation, which it must do in self-preservation.

It is believed the highway bureaus would do better to take steps to impress upon motorists the importance of observing the rudimentary precautions before crossing railroad tracks, either steam or electric. Coupled with some form of examination and registration of all drivers to eliminate those obviously unfit, the annual loss of life and limb due to the grade crossing could be reduced to a small fraction of what it is today, and accidents of the character of that of Dec. 9 could be eliminated entirely. Not only would this apply to grade crossing accidents, but the idea of greater care should reduce traffic accidents of all types.

### New Type Committee Activity May Speed Modernization

THE recently formed committees of the American Electric Railway Association on city operation and interurban operation represent a distinct innovation in the methods of that body. In the past committees have had quite definite assignments, and have held strictly to their tasks. Here, however, are two committees whose function is to expedite modernization of railway operation by investigating first hand the advance practices of various companies and passing these on as suggestions to other companies. The field is so broad that only the most general instructions can be given in advance.

In general, the scheme of these committees is to have the entire country divided into seven regions, with a vice-chairman of each committee in each region. These men, who are really the key men of the entire plan, are to devote a portion of their time to visit and investigate the properties in their respective territories, with a view toward finding out what each property excels in that is applicable to other properties. This is to apply not only to the physical elements, but also to organization, publicity and public relations, and financing.

The possibilities from the work of these committees is very great indeed, the measure of accomplishment depending very largely on the interest, intelligence and time devoted to the work by the vice-chairmen. If they succeed in fulfilling the ideas of President Budd in creating the plan, they will appreciably speed up the modernization program throughout the industry.

There is no question that there is plenty of room for improvement in this direction. One trouble with the railways is their procrastination in adopting modern methods, even though it may be shown conclusively that they are advantageous. These committees can commend or criticize existing practices and thus perhaps stimulate managements to greater activity in putting their houses in order. But if the suggestions of the committees accomplish nothing in this direction, one thing is certain—the traveling vice-chairmen will themselves get a lot of good out of their work by virtue of taking time off their own jobs to study the practices and facilities of other companies.



# Modernize and Merchandize

An interview with  
**Britton I. Budd**

President  
American Electric Railway Association

By *Harry L. Brown*  
Editor Electric Railway Journal

IF ONE wanted to follow the charted course for published interviews, Britton I. Budd, the new president of the American Electric Railway Association, would make an excellent subject. His personality and position would lend themselves to a colorful exposition of the traits and ideas which have enabled this self-made man to attain such great heights of responsibility. For Mr. Budd is as good a fellow and as interesting and capable a man, and has been entrusted with such responsibilities as would delight the literary genius looking for a story—a human interest story of a big man.

But further than to remind you that Mr. Budd is president of the Chicago, North Shore & Milwaukee Railroad, the Chicago Elevated Railroads and the Public Service Company of Northern Illinois, it is preferred here to omit all reference to those things which would reveal the character of the man and his pre-eminent fitness for leadership, appealing as they are, and devote the entire available space to the unadorned statements which express the views of the head of the electric railway industry on many of the more important problems confronting the railways today.

Suffice it to say that something of the personality of Mr. Budd, and some idea of the reasons why he occupies so prominent a position in the field, will be better appreciated after a reading of what follows. Submitting to my questioning, he has here contributed his views on the bus, on the general philosophy of selling transportation, on personnel training, modernizing equipment, especially interurban equipment, on publicity and advertising, on future rapid transit development, freight handling, results of one-man operation of modern cars, and so on.

The bus seems to be about the uppermost question in every electric railway man's mind these days, so I started in on that subject. The record of the interview follows:

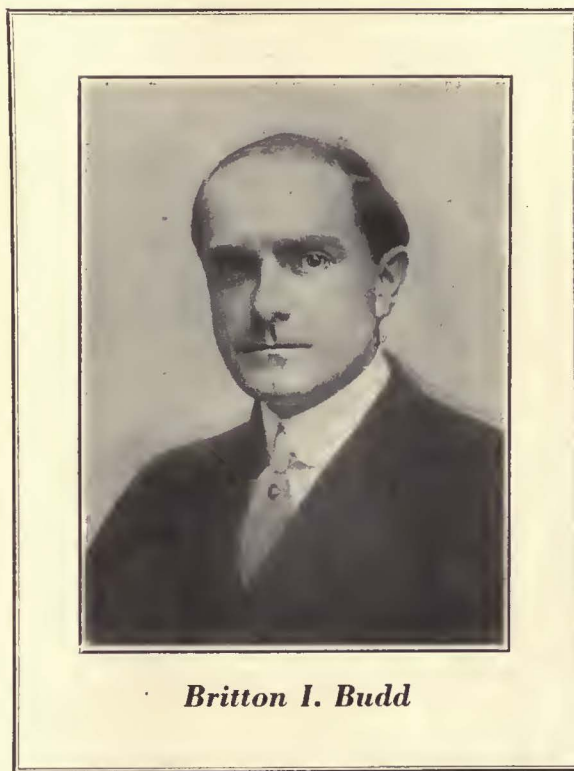
## THE BUS NOT A PROBLEM BUT A USEFUL TOOL

**QUESTION:** Do you consider that the bus is about the biggest new national problem confronting the electric railway industry?

**MR. BUDD:** I do not think that I would call it a problem. It seems to me it is an added feature of transportation that is going to be utilized by the electric railways.

**QUESTION:** To what extent do you think the industry will extend its present bus operations? Will it buy a good many more buses in the near future than it has in the past?

**MR. BUDD:** I think that the electric railways will find



**Britton I. Budd**

it to their advantage to use buses in a good many different fields. Of course, the amount of bus operation is going to increase very largely. The usefulness of the bus has been demonstrated and its use extended in so many different ways that I believe we can look for a very large increase in the number of passengers transported by means of buses. Furthermore, this is a development of the immediate future. It is right here at the moment.

**QUESTION:** Do you think the railways ought to go into the bus field with a downtown service, or merely connect up with existing rail lines at outside points?

**MR. BUDD:** It depends entirely upon the character of the city. If there are certain sections of the city where the territory is able to support it, there is no reason why there should not be a bus service delivering the people to the heart of the city, predicated of course on the streets having sufficient capacity and the bus service not contributing seriously to congestion.

**QUESTION:** Even though such operation might be competitive to a certain extent with existing rail lines?

**MR. BUDD:** Well, that of course is something that cannot be answered in an off-hand way. I can conceive that in certain areas of a city which might not be conveniently served by an electric railway a bus service could be utilized to good advantage.

**QUESTION:** To what extent do you think the motor bus can actually be made a monopoly? We speak of maintaining the monopoly of transportation, co-ordinating the service and keeping the bus in the hands of the railway people, but is the bus actually subject to monopoly? In other words, because of the small investment required to get into the bus business, by individuals, can it actually be made a monopoly?



MR. BUDD: It should be made a monopoly, because if it is not, it will be a most unprofitable thing to the individuals or companies who operate it, and the service will be unsatisfactory to the people. It should be co-ordinated with the other transportation facilities of the city and protected from competition. It would only produce chaos to have a lot of bus companies operating in one city.

QUESTION: In other words, it is partly a matter of protecting the bus against itself as well as the railway against the bus?

MR. BUDD: Absolutely. That was illustrated in London, where the Underground people have 5,600 buses. Through some mistaken notion on the part of the Parliament, a great many others were allowed to go into the bus business, and the inroads that they are making in taking the cream off certain routes have presented a serious problem to the big bus company and made what was a profitable venture almost a doubtful one. In other words, they are jeopardizing the main service supplied the people.

QUESTION: What further steps can be taken to emphasize the public need for co-ordinating all means of transportation and utilizing the existing traction corporations for the purpose?

MR. BUDD: Of course, I have no doubt that co-ordination of all transportation in the community would be the best from the standpoint of the cost to the rider, and it would also insure the municipality of meeting the demand for any kind of service, or any extension of service, because this one agency would be able to furnish whatever transportation was needed at any point in the community.

QUESTION: Then, what is your idea of the position the bus will occupy in transportation. Is the field for it largely in the outlying sections of cities and in inter-urban territory or in the congested sections of cities too?

MR. BUDD: Well, in the smaller communities it may be that bus service, assuming that a community has no service of any kind, will meet the needs and help the growth. Beyond this, necessarily the city ought to have electric railway service, and there the extensions that are needed from time to time can be first instituted by the bus until the territory will support the electric railway. There can also be feeder lines, or lines of a supplemental character where electric railway service will possibly never be supported. A bus can be operated at certain times of the day to serve certain needs and discontinued the balance of the day. It is flexible for serving a small number of people with infrequent service.

QUESTION: Is any railway company making any money on bus operation?

MR. BUDD: Why, I think there are instances where the bus is profitably operated by an electric railway. There are a good many considerations that enter into the matter, so that it is not to be judged purely on the basis of whether it is profitable. Take the case of a feeder to an electric railway, and it is pretty difficult to segregate the income that the railway will get for its portion of the haul and the business that is delivered to it which it probably would not otherwise get if it were not for the bus. Then there is the other feature, where buses are used for pioneer work. If the electric railway had to invest in tracks and facilities and wait for the territory to build up, that might be a very

considerable factor. So, as I look at it, bus operation may or may not be profitable, but where the electric railway has need of it, it is a useful tool. It serves certain purposes due to the modern changed ideas of the people and also due to the fact that practically all communities in the country territory adjacent to cities are changing.

People are spreading out. They are getting farther and farther away from transportation. They do not regard it as necessary to be right close to existing transportation any more. The bus comes in to fill a need in connection with these new living habits. I know that is going on all around Chicago. People are locating out in the country considerable distances away from the existing means of transportation in locations that would not have been thought of five or ten years ago. Now, there will be no possibility of serving those people with a railroad, and yet they can be served with a bus and at such times and to such an extent as may be necessary. But as a general answer to your question, as a rule the bus operation by itself has probably not been profitable.

QUESTION: Do you think we are moving in the right direction by setting up the general policy of charging the same rate of fare on the bus that we do on the railway and issuing free transfers between the two?

MR. BUDD: No, I think that the bus operation should be made as nearly self-supporting as it can be. There may be exceptions to that rule, as for example where an extension is contemplated on the end of a railway line, and preparatory to that a bus line is put on. The company might be able to afford that bus service and give a transfer, which would be perfectly all right.

QUESTION: I would like to have your ideas about the advisability of publishing bus matter in ELECTRIC RAILWAY JOURNAL. Do you think we would be aiding the electric railway industry more now by discussing railway operation of buses in articles in the JOURNAL?

MR. BUDD: I have thought of that a good deal, and I am inclined to think that the time is getting around to the point where the ELECTRIC RAILWAY JOURNAL could incorporate bus features as part of the JOURNAL. I do not know whether the time is here now or whether it should be done in six months or nine months. But as soon as the electric railway industry gets to the point—and I think it has reached that point now—where it will utilize the bus to the extent that seems advisable and necessary, then the JOURNAL would be helping along the idea that it is an accepted practice of electric railways to utilize the bus. And it will be in the best interests of the industry when that idea is generally accepted. It was too bad it was not accepted, in my opinion, two or three years ago. I think it would have saved a lot of grief and trouble that we may be a long time in remedying.

#### THE OUTLOOK FOR THE CITY RAILWAY

QUESTION: What, in general, do you think is the future of the street railways with regard to increase or decrease of traffic?

MR. BUDD: I think the street railways will continue always to handle the mass of the people, and the increase of traffic will go on the same as in the past. I do not think there will be any effect upon the street railways by any bus operation. The street railways of this country, however, have got to deal with vehicular inter-



ference in congested portions of cities through some means of rapid transit or underground transit. That is not altogether their problem. It is the problem of the cities. The vehicular congestion due to the enormous increase in the number of automobiles is fast approaching the point where there is insufficient street capacity. Space off the streets has got to be found for parking these machines. The electric railway will have to find some solution of present congestion in order to make reasonable speed. Whether that will be done underground or overhead will depend on the community. It ought to be treated in such a manner that the expense will be borne by all the city, not alone by the company or the car rider, because the necessity for subway or elevated is simply a development that has come with modern conditions. The only other way to get more street capacity would be by materially widening the streets. This could be done, probably, in some communities, and in others it could not. But in any case it should not be done at the expense of the railway company.

**QUESTION:** Is there any prospect of getting some measure of rapid transit service with street cars by giving them the right-of-way on the main routes, at least during the rush hours, and thus avoid the heavy investment required in subways?

**MR. BUDD:** That may be a possibility if there are enough entrances and exits to a business district so that some streets could be used exclu-

sively for railway traffic. But in most cities, a good deal of the business is done through the medium of people driving around in automobiles, and to exclude them from certain streets would make it an impractical proposition because it would require people desiring to shop on that particular street to walk. Even then it might possibly be worked out.

**QUESTION:** You are convinced then, I take it, that there really is not much hope of having rapid transit systems unless the public does come in for a share in the investment?

**MR. BUDD:** No, because there is an enormous outlay, and there is no good reason why the property owners affected should not bear that expense. Due to the growth of motor vehicles and the height of buildings, the street capacity is no longer able to accommodate business. Consequently it becomes necessary really to build another street underground or overhead, and that is in the interests of the city; it is in the interests of facilitating business. If things go on indefinitely, nobody will be able to transact business. An automobile won't even be able to get to a place. A truck won't be able to deliver goods or take goods away. And the time element will be such that business can only be conducted at a tremendous loss.

It will have the effect of driving business out into the less congested sections. There is no doubt but that will be one of the developments to come in the modern city. There are a lot of business concerns now doing business in the heart of the city where there is no need of it at all. They can just as well be 3 or 4 or 5 miles out. There is talk here in Chicago now of certain large concerns like insurance companies, moving out of the Loop district. Their business is largely conducted by mail. They have thousands of employees. They can get them right around in the neighborhood that they live in and get away from all of the congestion.

But still with all these developments there will be need of getting more street capacity. If it can be obtained by new streets, that is one way; if it can be obtained by wider streets, that is another way; if it can't be obtained by either one of these means, why then it is a question of going underground or overhead.

**QUESTION:** Is there any possibility of impressing the public with the necessity of so regulating vehicular traffic as to give the street railways more freedom in their operation?

**MR. BUDD:** A great deal can be done that way, by eliminating parking and by proper traffic regulations and by diverting as much traffic as possible from the streets on which the railway operates. There is no reason why that should not be done.

**QUESTION:** Mr. Budd, what do you think of the weekly

pass as a seller of service and a creator of good will?

**MR. BUDD:** I think it is a fine, equitable means of affording low cost transportation to people who frequently use it. It is the only process that I know of in a city where with a fixed rate of fare you can give a wholesale rate for a wholesale use. That use is spread out; it is not confined to the rush hours, so it is not inequitable. There is no unfairness toward the other car riders by reason of it. It encourages a more frequent and greater use of railway service. By encouraging the use of transportation you are increasing the good will. Transportation is like anything else; it is a habit and it can be cultivated. We think the pass makes that possible.

In addition, it allows the interchange of business and occupation all over the community. It does not confine it to any one particular spot and therefore it is a good thing for the merchants. It is a good thing for the different parts of the community to have a free and easy means of intercommunication. It also allows merchants in one part of the city to feel that the people in another part of the city are easily accessible to them. The same way with entertainment houses, theaters, restaurants, stores, lodges—any kind of community activity that depends upon the attendance of people is

## *New Traffic Can Be Created*

**I BELIEVE** that it is possible to create new traffic. We fellows in the transportation game are very prone to think that the traffic available is only that where the rider is required to travel. We think when business is increasing that it must be due to the fact that everybody is employed, that the weather is fine, and all that. But back of all that is the question of whether the service is encouraging travel. I tell you, you can just as well increase the quantity of travel as you can increase the sale of some class of goods by proper merchandising and proper standards.



benefited by the use of the pass. Therefore, the pass, making all this more readily possible, reacts favorably on the transportation company, and the people and stores and others who are benefited feel that the railway company is performing a very useful service in the community. Therefore, it engenders good will.

QUESTION: Are you satisfied it brings more money to the railway company?

MR. BUDD: I am. From my experience with the pass as applied here, I regard it as a very satisfactory method of selling transportation. We have no criticism to make of it at all. It has brought a great many

## *Rail Transportation Should Be Up to New Standards*

**T**HE American people, all said and done, will not be satisfied with anything but the best of service. They are willing to be liberal where that service satisfies them, and they like luxury. Standards of living have changed a great deal in the last five or six years and transportation ought to be changing with them. Consequently, I think that our track ought to be better maintained, our speed ought to be materially increased, and the exterior of our cars ought to be made attractive and the interior more luxurious. All this will tend to sell the thing that we have to sell, and that is transportation.

people to use the service who might otherwise be using automobiles, which would cost them a great deal more money and a great deal more time.

The great problem of transportation in a large city is continually to increase the volume of business so that the unit cost can be reduced, and anything that tends to increase the riding habit will ultimately tend to lower the cost of performing the service. If you can lower the cost of the service and make it attractive, you can increase the volume, and volume is the desirable thing, because it means the greatest convenience to the public.

### LOW FARE FOR SCHOOL CHILDREN BUILDS GOOD WILL

Just another thing in connection with that question of the rate of fare. I believe that the rate of fare for school children should be made just as low as it is possible to make it, to encourage the use of railway service by the young people. This should be done not only as a matter of performing a useful service to the community, but also to cultivate the good will of the parents. They will intrust their children to the railway company and feel that they are safely and carefully looked after by the crews.

Another element is that the good will and satisfaction of people in the communities is increased where they have large families. They want to take those children

out, maybe in the evening to visit friends, maybe take them shopping, maybe to go to church, maybe to go to the parks and amusement places. Well, the parents of large families find it burdensome to take the children. They probably would not be very happy if they had to leave them at home on account of the expense of taking them along. Therefore, the low fare serves a very useful purpose there and makes friends. I do not know of any class of business that can be increased in a more substantial manner than in making it possible for the children to use transportation, and at the same time it means good will.

Now, on the North Shore Line, although we have increased our rate of fare a number of times, each time I have held firm on this question of the rate for school children. And I believe that this was one of the things that did much initially to make the people in that territory feel that we are the right sort and have the right ideas; whereas if the rate of fare for those children had been raised, we probably would have had every parent up in arms against us.

What does it mean to us? It is a little service that you perform of an auxiliary character compared to your regular services—the handling of those children at a small rate of fare and having all your crews give them special attention. Why, one of our trains coming down here in the morning is like a party, the conductors and the motormen looking after the children and calling them by name. Nothing is to be gained by the thought that you cannot carry school children except at a certain rate of fare. Whatever you obtain in income by an increase would be more than offset by ill will.

### SEES EQUIPMENT DEVELOPMENT COMING

QUESTION: Mr. Budd, what can the manufacturers and the railways do to promote more rapid development of electric propulsion apparatus for railway service? I know that is a subject you are interested in.

MR. BUDD: Well, they probably could do a great deal, and they are doing a great deal. With the more prosperous condition of the electric railways I expect to see a great many developments in the next few years, not only in improved apparatus, more efficient and more economical apparatus, but also I expect to see marked improvements in car design. My own thought is that the electric railways, during the times of decreasing income and increasing expenses in the past years, have followed strictly a program of what was absolutely necessary to perform the service, eliminating everything that was in the nature of luxury or refinement. There they made an error, and a very considerable error, because the American people, all said and done, will not be satisfied with anything but the best of service. They are willing to be liberal where that service satisfies them, and they like luxury. Standards of living and the standards of thought have changed a great deal in the last five or six years and transportation ought to be changing with them. Consequently I think that our track ought to be better maintained, our speed ought to be increased where it is possible, and it is possible in most cases—it ought to be materially increased, and the exterior of our cars ought to be made attractive and the interior ought to be made more luxurious. All this will tend to sell the thing that we have to sell, and that is transportation.

QUESTION: You are thinking of city as well as interurban service in that, are you not?

MR. BUDD: Everything. To my mind we ought



to be striving for innovations, changes, rather than simply sticking to something that seems to be an accepted practice, because whether we realize it or not, all our ideas have changed. Ten or twelve miles an hour won't satisfy us any more. We are irritated at the loss of time. The ordinary luxuries in travel that we thought were all right a few years ago are no longer acceptable to us.

We look with more or less scorn upon a tarnished or old fashioned car on the better through trains. We turn up our nose almost instantly. In a measure that is the reaction that the average rider gets when he sees the same stuff day in and day out, and there is never any change and never any innovation. So I think it is something that we can do constantly—strive for something in the way of improvements. The American people like to see changes. They like to see new ideas, and if they do see them, why they are keenly interested.

It has been a revelation to me on the North Shore to see what a lot of interest people really do take. Everything we do is of just as much interest to the people as to us. They talk about it, are enthusiastic about it, and act as though they themselves were personally interested. So monotony in any kind of business, I don't care what it is, is bad. The merchant who has the same window display every day in the year is going to lose your interest. You are going to go to the fellow who is giving you something in the way of a change, setting up new goods in the window, not the same old stuff. You have seen that and you have tried it and you know all about it, and there is no thrill in it. But the merchant who is changing his windows all the time is going to attract your business. The business of transportation is like anything else. People are not forced to use our method of transportation.

There are many instances that will illustrate that. We put observation cars on the North Shore. There is a very rich man who had never ridden on our line, though he had often seen it as he traveled up and down along side of it. But he hopped on one of those observation cars one day and rode to Lake Forest, and he said: "That is something like it. I have been hearing all these people talking about this electric road. I never could see anything in it, but now you have got something that appeals to me. I am for the electric and after this I am going to use it."

Well, now, you might question whether there is any money in those observation cars. I do not think there is. There are only twenty-six seats in them and we get fifty cents a seat—that is, \$13 if we get them all filled, as against a coach with fifty-two passengers in it. You cannot figure out any money in that. But how much collateral good and how much drawing power has it? It is advertising our service and encouraging the use of it, the frequent use of it—so much so that we have ordered some more of these cars. We will have six trips out of each city every day with observation cars on the trains. If those are well patronized we will put on three more. If it is necessary in order to attract a certain amount of business to have an accommodation of that kind, why not furnish it? It is this volume from all sources that creates the business.

So, on this general idea of equipment, it seems to me we ought to tend toward more comfort, and depart from the plan we have had of just simply using whatever will last the longest, like wooden or slat seats, cane seats, and a certain type of frame, whether it is comfortable or uncomfortable, as long as it is a seat.

We know in the automobile business that a family will buy first a machine at \$1,000 and then, because they want something more comfortable, something with a little more style to it, they will buy one for \$2,400 and they will feel it is money well invested, and it tends to make life a little more pleasant and a little more worth living. Why isn't the same thing true of the railroad problem?

Take the example on the Elevated here of our getting a paint color for the exterior of the cars that would, when dirty, be just the color of dirt. That was the reason for our selecting that color years ago as it would require less cleaning. We totally excluded all

## Get Something New— Monotony Is Bad

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It has been a revelation to me on the North Shore Line to see what a lot of interest people really do take. Everything we do up there is of just as much interest to the people as to us. They talk about it, are enthusiastic about it, and they act as though they themselves were personally interested. So monotony in any kind of business, I don't care what it is, is bad.

idea of pleasing appearance, of getting a good reaction from our passengers, having them say, "Well, there is a nice looking vehicle. I am glad to ride in it." The only consideration was that it would cost less to clean that car and that the paint of that color being near dirt would last the longest without repainting.

Well, now that was undoubtedly the theory that a great many of us were working on, and that is a back number. It won't do. We have got to get the railway fellows to get away from that idea. We want speed—good looking exteriors and comfortable interiors, with speed. That is what the people want nowadays.

### FINANCING NEW WORK

**QUESTION:** In the matter of making improvements that show substantial economies or offer possibilities for increased earnings, isn't there usually some way to finance that work if the railway has the will to do it? We hear a good many railway companies, especially interurban railways, which recognize there are many directions in which they can economize and improve, always answer with the same thought—that they haven't any money.

**MR. BUDD:** Well, that is a pretty hard question to answer, but where they have obsolete equipment and equipment that is unsuited to modern conditions, heavy,



unnecessarily large, extravagant in power consumption, extravagant in maintenance, still may have years of life, there ought to be some means found of replacing that equipment with modern equipment; if not all at once, gradually. The economies in many cases through the purchase of that new equipment would be so great that those companies ought to be able to buy it even if they did not have the money, because it could be easily shown to the manufacturer or banker that within a very few years the cost of it could be paid in lower operating expenses. Some of these interurban companies that are operating these great battleships, due to some preconceived notion that simply because it happened to be an interurban it had to be a car with a certain contour, a certain formidable appearance and weight and so forth, regardless of the service, all that class of cars the railway companies could well afford immediately to replace. I think they would find they would have the co-operation of the manufacturers in doing so.

I know of a case where equipment of that type could be replaced with modern equipment and the entire cost of it saved in operating expenses in five years. Some of this stuff we are now running is ridiculous.

QUESTION: Between car trust certificates, and employee and customer stock ownership, then, there ought to be some way to finance good improvements, don't you think?

MR. BUDD: Surely.

QUESTION: What are your ideas about this whole question of valuation and capitalization and relations between the two, and what ought to be done with the financial structure of many railways?

MR. BUDD: Well, I do not know. Of course it is very easy to say that the total securities should not exceed the value of the physical property. That is an ideal condition; and a further ideal condition to be aimed at is that the bonded debt should constitute less than 50 per cent of the total capitalization.

Some of these companies probably will have to be reorganized and their financial structure recast. Where that is possible it will of course put them on a much sounder financial basis, and when that is generally accomplished, will greatly improve credit and public relations.

QUESTION: On this matter of public relations and publicity, I wonder if you have any ideas of new ways to build sound public relations that might be tried by the utilities. What more can we do than at present?

MR. BUDD: What more can we do? Well, if every company was doing its utmost to give the best service it was capable of and its employees were actuated by an earnest desire to serve and to make friends, and if the facts and information about the company and its service and its problems were being disseminated continually year in and year out, if every company was liberally advertising year in and year out, if it was talking its problems before public bodies year in and year out, if it was seeing to it that every one, including the children in the schools, was informed, then I would say that maybe there was nothing more to do, except to do all that every year, year in and year out. But there are a lot of companies that are not doing a thing.

QUESTION: Then, Mr. Budd, you do not think there is any such thing as overdoing publicity, railroad publicity?

MR. BUDD: No, not if it is intelligently done. I do not think you can do too much of it, and I do not think that you can be too liberal in your appropriations for

doing it, within reason, because an uninformed public not only reacts badly upon the credit and the business of the company, but it also has its reaction upon any constituted authorities, the commissions, the juries that try personal injury cases, the municipal authorities. These authorities may want to do the fair thing, but with an unfriendly atmosphere all around them, due to a lack of information, they are either neutral or their hands are tied for they reflect that unfriendly atmosphere, so that your whole structure depends upon it. And if you have to get capital from the people through some customer ownership plan, why your very life depends upon it. You cannot exist, because people who are not informed and are unfriendly certainly will not lend you their money to put into new equipment and plant; that is self-evident.

You have also got to have your employees informed and familiar with the company's affairs or they cannot possibly talk intelligently to the people they meet or their neighbors, and they cannot defend the company even though they may wish to. To inform your employees you must have your supervisory force informed.

QUESTION: Quite a number of railway men have asked me how much a railway ought to put aside as its appropriation for publicity work.

MR. BUDD: Well, generally speaking, I should say that for publicity and advertising they could safely put aside 1 per cent of their gross as a minimum.

#### RAILWAY FIELD AS OPPORTUNITY FOR YOUNG MEN

QUESTION: Mr. Budd, what can you say as to the opportunity the transportation industry now offers to young college men?

MR. BUDD: I think it offers a great opportunity. The problems of transportation in the big cities and in the country are, if anything, more interesting and call for greater skill and initiative than in the past. And with modern engineering and modern methods, these problems will test the mettle of our college men and afford them great opportunities, not only in connection with the electric railways as they exist and as they will develop, but in the extensive rapid transit development that is bound to come.

Rapid transit development during the next few years is going to be a very great factor because the trend of the population is toward the city, and that means, as the cities increase in area, greater speed will have to be reached in order to reduce the time involved in travel. So that there will be an intense development of rapid transit facilities in all large communities as main arteries to transport the people very considerable distances in a short space of time at a high speed. In addition to that, I believe that all of the steam railroads as they now exist in these big communities will be electrified and that to all intents and purposes they will become part of the rapid transit systems of the great cities. They may even be interconnected or coordinated with the local transportation systems in the communities.

Finally, all these various means of transportation, whatever they may be, steam railroads, rapid transit lines, street railway lines and bus lines, will be utilized to their fullest possible extent for the purpose of serving the people, because transportation in these areas of tremendous population is as essential as the sewer system, as the water system, as the power system. With rights-of-way difficult to obtain, costly, if not



prohibitive, why the utilization of all existing means of transportation will have to be employed for the common purpose of serving the people with the necessary means of intercommunication. Transportation is going to be more and more a development and a problem due to this tremendous growth of cities, and therefore there ought to be opportunity for advancement and success of young men entering the business far greater than in the more or less pioneering days of the industry.

**QUESTION:** There seems to be a pretty well defined feeling among undergraduate student bodies that the opportunity to make money in the transportation field is less than in other lines of endeavor. What is the answer to that?

**MR. BUDD:** Of course, in the electric railway field it is probably true that there is usually less opportunity for individual ownership or part ownership of some railway enterprise, such as there might have been twenty or twenty-five years ago in the days of construction and promotion, where it might be possible for a young man either to have built or become a part owner in a property or some enterprise, but on the other hand those were very small undertakings. Today, these great enterprises must have the more skilled men in the technical and administrative ends, and there will always be a demand for them, and there will be liberal and generous salaries in order to attract those men who can meet these problems of engineering and management. But I believe that if, today, the salaries

were examined in the electric railway industry they would compare favorably with salaries paid in any other industry in the country. The percentage of men in high executive positions who have not had the advantage of a college education, but have been technically trained and have natural ability, will also be found to compare favorably with the percentage in banking and other lines of business.

**QUESTION:** Then, if we really have a good opportunity for young men in the transportation business, what ought to be done to promote courses in public utility economics in the universities?

**MR. BUDD:** That should be actively instituted in every state in the Union, not only as a matter of getting the technically trained young men into the industry, but also men trained in the schools of commerce or business administration. There is just as much need in the business and financial and administrative side of the business as there is in the technical side, and the opportunities are just as great.

If utility courses were instituted in the universities it would be the means of educating the student body and the faculty and the administrative bodies of the universities in the needs and the problems of the electric

railways, all of which would be most helpful to the industry and to the country. There ought to be an effort made in every state to see that public utilities or electric railway courses are included in the curriculum of every university and technical school. And the electric railways ought to interest themselves in a well-defined plan of taking graduates, a liberal number of graduates each year, into their service. They ought also to have some kind of instruction in their individual companies for the benefit of those men who have not had the opportunity to go to college. There are many

men in the ranks who, with a little help through instruction and correspondence courses, can so improve themselves that they will of their natural ability make very desirable executives.

**QUESTION:** I would like to switch for a minute to the matter of wages. What do you think is going to be the wage situation in our industry in the next few years?

**MR. BUDD:** I do not believe that wages will materially recede from the present standards. There may be some decrease, but as a general thing I think the present standard of wage and living conditions and so forth are going to obtain in this country for an indefinite time.

**QUESTION:** That does not mean much prospect for lower fares, does it?

**MR. BUDD:** No, I do not think so. I do not think there will be any opportunity for that except possibly through an increased volume of business and relieving the car riders of some of the burdens

of taxation and burdens of paving, and burdens of various kinds that are loaded upon them.

#### MODERNIZATION THE PRINCIPAL AID TO THE INTERURBANS

**QUESTION:** In general, Mr. Budd, what is the future of the interurban railways? They are the hardest pressed members of our industry now.

**MR. BUDD:** Well, to my mind, all these interurban roads of every kind and character, if there is any possible justification for it, ought to obtain modern, light, speedy equipment, and meet the changed conditions with like changes of cars, and obtain economical operation and speed.

Now, if they cannot compete with present conditions with those modern means, why, I do not know any other thing for them to do. You know that it is obvious that a good many interurban roads were unwisely projected with no economic reason for their construction. A little competition by the private automobile, taking away the margin above bare existence that did prevail, brings such lines to the point where they no longer can exist, but it does not change the fact that originally they should not have been built.

### *Low Children's Fare Builds Good Will*

**T**HE rate of fare for school children should be made just as low as it is possible to make it, to encourage the use of railway service by the young people. This should be done not only as a matter of performing a useful service to the community, but also to cultivate the good will of the parents. On the North Shore Line, although we have increased our rate of fare a number of times, each time I have held firm on this question of the rate for school children. And I believe that this was one of the things that did much initially to make the people in that territory feel that we are the right sort, and have the right ideas; whereas if the rate of fare for those children had been raised, we probably would have had every parent up in arms against us.



We hear a great deal about the abandonment of interurban roads, and that the abandonment is the sign that the automobile is going to supersede the electric railway. That is all fallacious reasoning. We see factories all over the country that at one time were in operation, but due to some changed condition or some reason or other they are vacant. Smoke is no longer coming out of the chimney and they are abandoned. Whatever their activity was, the time is past for it or the conditions are changed so that they can no longer operate. Well, that is the history of many different enterprises, and it has no significance whatsoever.

## *Public Relations a Continuing Task*

**W**HAT more can we do? Well, if every company was doing its utmost to give the best service it was capable of, and its employees were actuated by an earnest desire to serve and to make friends, and if the facts and information about the company and its service and its problems were being disseminated continually year in and year out, if every company was liberally advertising year in and year out, if it was talking its problems before public bodies year in and year out, if it was seeing to it that every one, including the children in the schools, was informed, then I would say that maybe there was nothing more to do, except to do all that every year, year in and year out. But there are a lot of companies that are not doing a thing.

On interurban lines not having sufficient population tributary to them, it is possible that even with modern equipment and greater speed they would not be able to change the results.

So, as far as the interurbans are concerned, I do not think that, with modern equipment and aggressive business methods, and the use of the bus where it is necessary to use it, they are going to do anything other than improve, and in the course of time expand, if the territory they are operating in has the requisite population to support them.

**QUESTION:** You think that is true in spite of the competition of the private automobile, which is the most serious factor right now, I guess?

**MR. BUDD:** Yes. You must recollect that our span of view is kind of short. We are looking at three or five years in the past and maybe two or three years in the future, but this country is growing at a tremendous rate. What may seem a deplorable situation today, in three or four or five years from now will be an entirely changed situation. Cities are growing. Country districts are growing and the automobile is bringing population into the country. We are a great, growing country and we are going to need more and more transportation. We may possibly have periods when we seem to have too much of one kind or another, but in ten years we will wonder how we ever thought

about getting along with what we have. We will have to have a whole lot more.

The automobile has done more than anything else to create the restless spirit in the people that keeps them moving all the time. People are not contented to sit at home all day Sunday and holidays like they used to be, and those who have automobiles use them, and those who have not accept auto rides when they can and use other forms of transportation. And then when the use of the automobile grows to such an extent that they cannot make time, they go back to the railroads.

**QUESTION:** Then do you figure that the building of good roads tends also to build up electric line traffic?

**MR. BUDD:** Indirectly, yes.

### GOOD POSSIBILITIES IN FREIGHT

**QUESTION:** Should the interurbans go after freight and express business in a good strong way? Is this one of their best fields of endeavor?

**MR. BUDD:** If the electric railway is going to enter into the field of transporting merchandise it should seek to give this service in a better way, or a faster way than it can be done by any other means; in other words, give a superior service. The company should not go at it half-heartedly, and even if it is only done in a small way, the business should be handled more satisfactorily and more efficiently than it can be done by other carriers. Interurbans can do that by a little organizing and with equipment suited to whatever the necessities may be. But they cannot hope to make any money or build up any very considerable business unless they have the proper tools, equipment and facilities for conducting the business. If they can give this superior kind of service, they not only can do it profitably, even more profitably on a car-mile basis than the passenger business, but they can obtain good will, the friendship and support of the business men and the industries in their territory as well. The freight business is simply another means of giving greater service.

The greater the number of useful services that the interurban can perform, the better its prospects for profit. I think a great mistake of the electric railways in past years, particularly the interurbans, has been a sort of half-hearted, half-organized attempt at performing some kind of a service. Now, then, the thing to do is to get the service on a high plane, if you are going to do it at all, and not permit it to be simply a makeshift, a shiftless sort of an effort.

The merchandise business can be developed very rapidly. Of course, it will bring many problems with it, and as it grows there will be need for additional capital, especially in terminal facilities, which are difficult and costly to obtain. But this is one class of business you must have facilities to do business with or else the cost of operation will just simply exceed all possible income.

Freight is handled economically in proportion to the efficiency with which it is handled, and if the efficiency decreases, the costs mount in a greater ratio than the decrease in efficiency. It is a very peculiar thing. For instance, if a company has terminal facilities to handle 100 tons a day and it attempts to handle 200 tons a day, the rehandling, the delays and the losses mount with tremendous rapidity as the congestion increases. Under such conditions everything is handled probably two or three times over, and this cannot be done with any degree of satisfaction or economy.

**QUESTION:** What about pickup and delivery service?



MR. BUDD: Well, I have advocated at various times—we do not do it ourselves—that the electric railways keep out of the pickup and delivery business, because it usually cannot be included in the rate. If it is included in sufficient amount, the rate may be reduced from time to time so that this service will become a burden and possibly make the whole business difficult to conduct profitably. This subject is still an open question in my mind though. If a pickup and a delivery service were possible that would lessen the terminal investment, it might be a desirable thing, for terminal facilities run into vast amounts of capital that have to be constantly increased and you can hardly keep pace with the necessity for expansion.

Now, it seems to me that the problem of concentrating all this freight in terminal freight houses is something that ought to be minimized. It may be that collecting stations or receiving stations at different points convenient to the shippers might form an answer to the problem. From these points the railroad company could truck the stuff to its cars, having it sorted so that there would be little or no delay in loading into the proper cars.

But that whole problem of pickup and delivery and containers and terminal freight houses is such a complicated thing and differs so widely in different communities that I do not know how to express an opinion about it. Personally I am inclined to think that the steam railroads will have to come to some kind of receiving stations, and I do not see why the same thing is not applicable to some extent to interurban roads operating out of big communities, to which the freight will be delivered by the shipper and then the railway company will pick it up at the receiving station and take it to its cars, or its freight houses. That would get away from all this concentration of trucking coming to the freight house and the delay and expense to the shipper trying to get his trucks in and out.

QUESTION: We have not reached the limit by any means, have we, in the application of the one-man car in interurban service?

MR. BUDD: No, nor have we reached it in city service. I think that the one-man interurban and city car—light, small cars with frequent service and low operating costs—is the solution of many difficulties on the part of many companies. They have not realized this to the fullest extent.

We had an example of what the small cars will do in Milwaukee. Some of the fellows thought we were absolutely crazy to put one-man single-truck cars on that city service. We cut the interval between cars in half or better, and increased our gross 50 per cent.

And pleased! Those people up there are tickled to death to ride in those little cars with the plush seats; a great many are riding only a few blocks now.

Take it in Waukegan, a city of 20,000, where we had practically no riding on the old street cars. We had our six-minute rush-hour service and fifteen-minute headway the rest of the day and nobody rode. People did not think about riding. But now I venture to say that you cannot go up there at any hour of the day or any hour of the night up until midnight that you won't find those little cars with every seat taken. A person comes out of the house and they have only got to go four blocks maximum, and there is one of these little cars right in sight, and they simply jump aboard. There is a large amount of riding of four or five blocks in both these cities, showing that people

can be induced to ride and make it a fixed habit and pleasure and convenience—a kind of rider we are not getting at all with old equipment. I do not see why there is not a tremendous opportunity for the railways in utilizing these little cars in frequent, fast service if there is any way to avoid duplicating equipment, where it is necessary on heavy routes to use big double-truck cars during the rush hours. The business is there for the frequent one-man operation. In the two places where we have tried it it has just increased the business exactly 50 per cent, and almost instantaneously. Those people must have been walking;

## Determine to Give a Superior Service

IF the electric railway is going to enter the field of transporting merchandise it should seek to give this service in a better way than it can be done by any other means. Interurbans can do that by a little organizing and with suitable equipment. But they cannot hope to make any money or build up any considerable business unless they have the proper tools, equipment and facilities for conducting the business. If they can give this superior kind of service, they not only can do it profitably, even more profitably on a car-mile basis than the passenger business, but they can obtain the good will, friendship and support of the business men and the industries in their territory as well.

I do not know where else the increase in patronage could have come from. They were there. The city has not changed its population. Our Waukegan lines never paid the interest on the investment in all of their twenty years. It commenced new and deteriorated and the track and the pavement and the reputation and everything else went to pieces—and today everybody is riding. I was up there last night and they were coming and going, every car filled, and all of them apparently happy. At least, they looked happy to me; I was happy.

We put a lot of new money into that property and bought a lot of new equipment, and it is earning, after charging about 4 per cent reserve for depreciation, a little better than 7 per cent on the total investment. It has not done that before in twenty years. It has barely paid operating expenses. That little city property ran about \$250,000 last year and the population of Waukegan and North Chicago and the Naval Station is approximately 30,000. Over four million passengers in a city of 30,000 is pretty good riding—a riding habit of about 140.

### NEW TRAFFIC CAN BE CREATED

About that idea of increasing the business, I am convinced that it is possible to create new traffic. We hear a tremendous lot of talk about the North Shore line getting all the business and taking it away from the other carriers and all that sort of thing. If there



were any way of analyzing it I believe it would be found that a very large percentage of the North Shore Line's business never existed prior to our giving this service. It was not there, and if our service were not there now, that riding would not be there. In other words, we have simply made it easy for people to travel, to visit and to do business. It is a natural thing, it is not unpleasant, it is not a fatiguing journey. Consequently, where a man might have taken a trip once in six months formerly, he now thinks nothing of taking it every week.

Now, we fellows in the transportation game are very prone to think that the only traffic available is that where the rider is required for some reason or other to travel, whether it is in the city or whether it is in the interurban field. I tell you, you can just as well increase the quantity of travel as you can increase the sales of some class of goods over here at Marshall Field's by proper merchandising and by proper standards. That is something we do not appreciate. We are inclined to think that when business is increasing it must be due to the fact that everybody is employed and that the weather is fine, and all that. But back of all that is the question of whether that service is encouraging travel. If it is encouraging travel, a natural momentum of increased travel is being built up all the time. That is a factor I think we could well pay a lot more attention to, because our people throughout the country do not appreciate that there is a great reservoir to draw from. They do not think of it in terms of possible business, and yet it is there. There is no question about it. The amount of travel tends to be cumulative. As the habit increases it tends again to increase.

I am always convinced of that right here in Chicago with our elevated system. If we had adequate track capacity here in the heart of the city and more express tracks in the outlying districts, I do not think there is any limit to the amount of business that we could get. The only limit would be the extent of our service and equipment.

Supposing you had a customer up in Racine or Kenosha and you were not particularly anxious to go up there because it was a tiresome journey. But on

the other hand, that customer could be of help to you, maybe you could sell him more goods or maybe he could help you sell goods somewhere else. Now if it is easy to see him and it is to your profit to see him, you will see him easily twice as often, possibly three times as often as if it were an arduous, tiresome, time-consuming journey. Then, you would be likely to write him letters instead of jumping on the train and going up to see him. I think that is just exactly what has happened in our case.

The same situation exists with this merchandise service. We have a great many cases where men doing business in Chicago no longer keep any stock in Milwaukee. They ship right out of their Chicago stock and fill their daily orders. The same thing is true in Milwaukee. Merchants there ship from their Milwaukee stock to Chicago and do not keep any stock in Chicago because they can get daily delivery. And that seems also to stimulate a greater amount of travel because in a measure it would practically allow for the expense of at least a man's time traveling because it is unnecessary to keep a warehouse in the other city. We have a lot of that kind of business.

QUESTION: What is your motive for putting plush seats in the new cars of the elevated?

MR. BUDD: Well, it is just the idea that I was talking to you about of making the car a little more comfortable and a little more pleasing in the interior—electric fans and shaded lights and plush seats—all with the idea of really making a more comfortable conveyance. Our fellows differed very strongly on this seat proposal, but I am convinced it was the right thing. When we get some more cars next year I am going to put some more new things in. I do not know just what they will be, but I am convinced that they are business getters.

QUESTION: I wish we could spread a little of the optimism of your organization all over the country.

MR. BUDD: Well, you see we have had so many hard knocks that even the faintest kind of smile looks to us almost like sunshine. We have been brought up on adversity and these things make us cheerful.

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**T**HE greater the number of useful services that the interurban can perform, the better its prospects for profit. I think a great mistake of the electric railways in past years, particularly the interurbans, has been a sort of half-hearted, half-organized attempt at performing some kind of a service. Now, then, the thing to do is to get the service on a high plane, if you are going to do it at all, and not permit it to be simply a makeshift, a shiftless sort of an effort.

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# Eliminating Half the Accidents in El Paso\*

In Five Years the Cost of Accidents Was Reduced from 15.7 per Cent of Gross Earnings to 2.5 per Cent—Gold Stars for Trainmen with Clear Accident Records Encouraged Safe Operation—A Breakfast at 3 o'Clock in the Morning a Feature in the Campaign

**N**INETEEN months without a fatality, either in the street, on the cars or to employees, during which time the cars of the El Paso Electric Railway traveled 4,855,000 miles and carried 47,900,000 passengers, is the record of accomplishment under the leadership of Alba H. Warren, manager.

Accidents have decreased from 1,767 in 1921 to 1,401 in 1922 and, based on seven months' operation, to 940 in 1923. The best monthly record is for July, 1923, with

responsible, he could have avoided it by the use of extraordinary care, it is charged against his record.

One of the very beneficial features which the plan has brought out is that every operator is exceedingly anxious to be absolved from blame, and he not only runs his car with the greatest caution but, in the event of an accident, he does everything he can to secure all the witnesses and necessary data to exonerate himself. In a very considerable number of cases the injured



Even the Car Step Risers Are Used to Direct Attention to Carefulness

only forty-nine accidents, compared with 109 for July last year and 147 two years ago.

The story probably begins with the inception of the "Honor Roll" and "Gold Star" plan, which were put into effect in October, 1919.

Every trainman who operates three months without an accident being charged against his record is given a day off on full pay. A committee, composed of an assistant claim agent, the assistant to the railway superintendent and the chief inspector, passes on each accident reported and if, in its opinion, the accident was one which could not reasonably have been avoided by the exercise of extraordinary care on the part of the operator, he is not charged with it. If, on the contrary, it appears that, even though he was not directly

party is asked to write a statement absolving the operator from blame. These statements, and the data secured by the trainman to exonerate himself, naturally are of great importance to the claim department and assist it in declining many claims which might otherwise have to be settled.

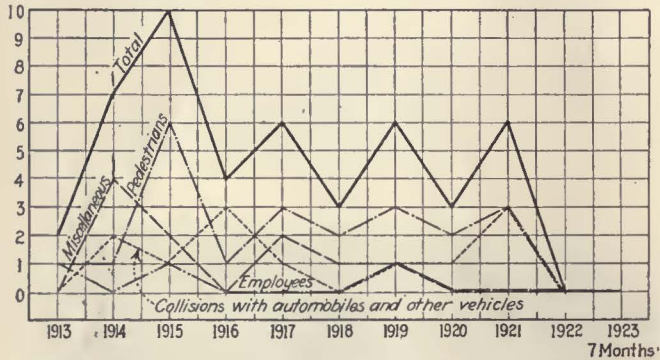
Inspectors, and all men in the operating department, are constantly striving to increase the number of men on the honor list, and the co-operation thus engendered has surpassed anything which had been hoped for. A man who stays on the honor list twelve consecutive months is given a gold star, which he wears on his sleeve, and receives an additional gold star for each succeeding twelve months during which he remains on the honor list. A soldier could not be much prouder of a medal of honor than are these men of their gold stars. There were in July, when this article was written, four men wearing three gold stars and likely to receive their

\*This article is based on material included in the brief submitted to the Charles A. Coffin Prize Committee of the American Electric Railway Association by the company named.



fourth in October, and seven other three-star men; twenty-five men are wearing two stars and thirty-seven one star. Aside from the pride which the men have in them, these stars create a very favorable impression on the riding public. There has been no kick-back of any kind, and it is believed that eventually many companies will adopt some similar plan. From 85 per cent to 90 per cent of the trainmen secure a day off on full pay each month.

This has not only had a tremendous effect on the reduction of accidents but has very materially increased the morale of the men. The cost is but a small propor-



Fatalities Have Been Reduced to Zero from an Average of Five a Year by Means of the Safety Campaign

tion of the money saved, and the remarkable effects of the plan have been manifested in many ways aside from the actual reduction of accidents and the consequent cost. One of the local papers ran daily a picture of a gold star man, under the caption "Do You Ride With This Star Operator?" and under the picture was a brief history of the man and his work.

**BULLETIN BOARD PORTRAYS ACCIDENT RECORDS**

In addition to the monthly bulletins, which are posted showing the names of those on the honor list and the number of months which they have been on it, a very interesting board is kept which affords, in a permanent way, an accurate portrayal of the trainmen's accident records. A large board, incased in glass and illuminated by several electric lights, contains a chart for each trainman in service. On this chart the name of the trainman is given, the date that he entered service and the dates and kind of accidents which he has had. On the first day of the month these cards are all placed on a side of the board bearing the title "No Accidents This Month." As the month progresses and the trainmen report accidents, these cards are moved to the other side of the board under the title "Accidents This Month." These cards show all accidents reported, regardless of whether they are charged against the man's record or not, and also have affixed in one corner a tiny gold star for each year the trainman has worked without an accident being charged against him. The cards are all arranged alphabetically, and every trainman's accident record may be seen at a glance. This record, being kept constantly before the view of all trainmen, has a tendency to inculcate in them a desire to make a good showing before their fellow workmen.

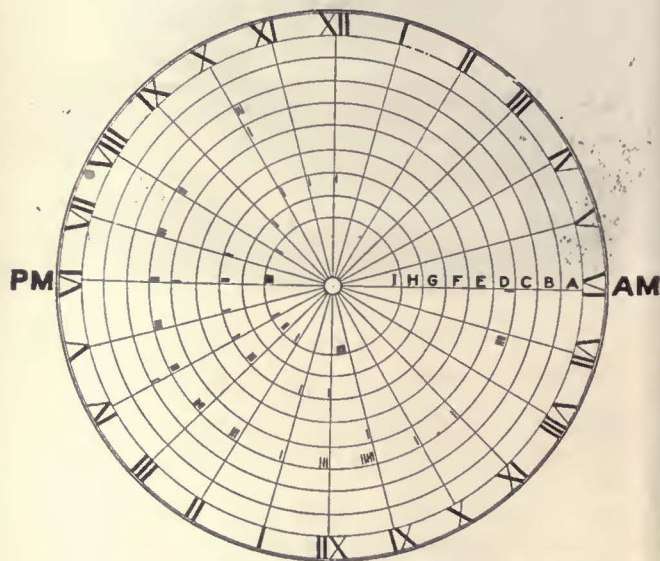
As a result of the enthusiasm in accident prevention aroused in the men, they have held meetings of almost every description, groups from various departments, night men and day men, men from one line with men from another, line inspectors, dispatchers, and, in fact, almost every conceivable combination. Upon their own

initiative line meetings are held by divisional inspectors, and the records of that particular line are gone over very carefully and the records of the individuals operating on it are checked up and discussed. An indifferent operator hasn't much chance of success among these men, and pressure is brought to bear on him by the men as well as by the officials.

In the early part of this year the night men challenged the day men to an accident contest covering a period of one month, the losers to pay for a banquet for the winners. The contest aroused a tremendous interest among the men, and the banquet, for which the night men had to pay, was one of the most successful affairs which had ever been held in connection with the company's business. Another contest was held and this time was won by the night men, and again a banquet was enjoyed by the winners.

**A BREAKFAST AT 3 O'CLOCK IN THE MORNING GETS THE ENTIRE ORGANIZATION TOGETHER**

For a long time the company had tried to devise some plan whereby all of the trainmen could be got together at one time. Meetings, dinners and suppers had been given without number, but were always attended either by the night force or the day force, but never by both in a body. The two contests above mentioned furnished an idea. Mr. Warren, the manager, told the men that instead of their working against each other, he would suggest a contest between the men as a whole and the company, and he proposed that if they could go through the month of April without exceeding ninety accidents, he would give the entire organization a breakfast at 3 o'clock in the morning. The scheme met with instant and enthusiastic reception, and the men set to work with greater zest than they had ever before shown. Every accident reported during the month was scrutinized by almost every man in the organization, and



The "Accident Clock" Was Used to Indicate for a Month the Hours at Which Various Types of Accidents Occurred

the offender was made to feel the severe displeasure of his more fortunate brothers. The daily newspapers carried articles giving the number of accidents to date, and there was a very general interest in the contest manifested throughout the city. The Automobile Club asked its members to be unusually careful in order to help the trainmen win. School teachers cautioned their pupils and industrial plants cautioned their men. After



a contest, almost as exciting and interesting as that occasioned by baseball teams for the world's championship, the men won with a score of 89, just one within the mark set.

The banquet was attended by the Mayor and Aldermen of the city of El Paso, the Mayor's representatives the Aldermen from the city of Juarez, Mexico; United States and Mexican customs and immigration officials, the Chief of Police, the City Treasurer and countless newspaper men and public spirited citizens, and finally, a Major-General of the United States Army. Beforehand it was feared that on account of the hour the program would drag, and it was, therefore, made as brief as possible, with the idea that the breakfast, which actually started at 2 o'clock, would end at a quarter to four. Instead the breakfast lasted until 5 o'clock without any slowing down whatever of the program, and in fact ended all too soon for every one present. Incidentally, trainmen who had been unfortunate enough to have accidents during the month served as waiters.

**OTHER SAFETY MEASURES**

The honor system has not alone been responsible for this splendid climax of the safety program. Throughout the entire organization every department has brought its best thought to bear on the accident situation, and nothing has been overlooked from the mechanical end and from the standpoint of public co-operation which could assist in carrying out the work. Dashboard signs and posters carry warnings to the public about certain types of accidents, beseeching them to be careful, and at other times pointing out the desirability of the service.

Inspectors make daily checks of cars on the line and impress on trainmen the necessity of caution at all times. They ride with the men during quiet hours, instructing them in making easy stops and starts, how to handle accidents if they happen, how to secure signed statements, etc.

A large personal record book furnishes invaluable assistance in following the work of the trainmen and in affording accurate information as to the individual's capability. Each trainman has a page in the book, and on this page an accurate record is kept of all matters pertaining to his work, the number and kind of accidents, the number and kind of violations, complaints on the part of his passengers, from his passengers, etc. The superintendent may, by going through this record book, tell at a glance the men whose work is below par, and he is able to detect very quickly men who have been reported or cautioned for careless operation. On the theory that a habitually careless man is, in the very nature of things, bound to have serious accidents sooner or later, men who the records show are not operating as they should are, after having been properly instructed and cautioned, dismissed from the service. This is a much better plan than locking the door after the pony has escaped and has been a considerable factor in assisting in avoiding preventable accidents.

Charts are constantly kept before the trainmen showing them the kind and number of accidents which occur each day, giving comparisons with previous months and previous years, and in addition to this a large stand, supplied with pads of paper the size of a double newspaper page, is used to make special pleas to the men, or to call certain matters definitely and forcibly to their attention. Colored crayon is used in writing notices on this stand.

In the clubroom and carhouses, in the shops and in several other places there are "Safety First" suggestion boxes with blank cards in a box beside them. On the face of each box is a statement to the effect that many possible improvements in the company's practice occur to the men before they are discovered by the management, and that each employee who thinks of something that might better the service or eliminate an accident hazard should convey the thought to the management through these cards. A surprising number of valuable suggestions are made and adopted.

In the superintendent's office a large backed map of the city is used to show the kind and location of accidents. Pins of various colors show derailments, trolley breaks, collisions with automobiles, collisions with other vehicles and collisions between cars. This map is of considerable value in locating places where particular types of accidents are occurring, with the result that immediate efforts may be brought to bear to correct the condition. This map is cleaned off and started anew on the first of each month, and at the end of the month a permanent record is made from it. In addition to the map, an accident clock is used, on which the hour in which accidents occurred is designated. This, too, is a monthly record.



A Feature of the Newspaper Publicity Was a Series of Portraits Like This

In case of an accident the divisional inspector is notified at the same time that the attention of the claim department is brought to it, and because of his proximity to the scene of the accident he is frequently on hand and secures valuable information prior to the arrival of the investigator. The report which he makes oftentimes covers information which would otherwise not be obtained.

Various warning signs, including those prepared by the American Electric Railway Association, have been used with good results. When the operator opens his door to take on passengers the step is lowered and a sign bearing the words "Watch Your Step" shows up on the body of the car just above the step, but it is not visible when the door is closed and the step raised up.

The public generally pays very little heed to such signs as "Do Not Talk to the Motorman." It was felt very necessary in the safety campaign to eliminate this practice as far as possible, and a small placard was designed which was placed in the vestibules of cars on the reverse side of the route sign boxes. This sign is worded as follows:

"Please stand back far enough not to obstruct the motorman's view. His failure to see might cause a serious accident.

"The motorman will cheerfully give you all necessary information, but please do not engage him in unnecessary conversation, thereby distracting his attention from his work."

The consent of the superintendent of public schools has been secured to introduce safety as a regular part of the curriculum of all public schools throughout the



city. Beginning with the September term, a talk on safety will be made each week by every teacher in each school. In addition to this, members of the company's organization and representatives of the Automobile Club will make talks about once a month. The Automobile Club and the daily newspapers also put on a "Safety First" week. The July record of only forty-nine accidents was in part due to the "Safety Week" sponsored by the El Paso *Herald*. Other similar campaigns for civic safety are also being worked out.

In answer to the question as to whether these things have really been worth while, the following figures can be quoted:

TOTAL COST OF CLAIM DEPARTMENT, SETTLEMENTS, FIXED CHARGES, ETC.		
Year	Total Amount	Per Cent of Gross Earnings
1919 .....	\$111,000	15.7
1920 .....	71,000	7.7
1921 .....	61,000	6.3
1922 .....	31,000	3.5
1923 .....	23,000	2.5*

\*Based on seven months' operation.

This means a reduction of from 15.7 per cent to 2.5 per cent of the gross earnings. The figures given include all the expense incident to the operation of the claim department, as well as all settlements, and a feature of the situation is that the total outstanding liability is estimated at only \$2,000.

### Railway Has Ample Supply of Free Coal

A UNIQUE feature of electric railway operation in the Susquehanna Valley of Pennsylvania is the fact that free coal is available to all. The Susquehanna River flows down from the anthracite mining district and carries with it large quantities of fine hard coal. This material collects at various points along the course of the river and is reclaimed by the use of suction dredges. The Harrisburg Railways avails itself of this supply of free coal and the only expense is that of dredging and hauling to the power house.

### Convenient Waiting Station

A SHORT time ago the Boston Elevated Railway had occasion to reconstruct its Park Street division headquarters in Dorchester. At the corner of the lot is a busy transfer point, and the management arranged to install a small but very convenient waiting station for passengers. It is of reinforced concrete one story high and without doors.



Convenient Waiting Station of Boston Elevated Railway on Park Street

## Company Helps Employees Buy Homes\*

Legal and Financial Aid Afforded—More than 75 per Cent of the Employees Take Advantage of the Opportunity

BUILDING and loan associations organized primarily for the benefit of the employees of an electric railway company are so rare that they are worth mentioning. The Colorado Springs & Interurban Railway has made arrangements with the financial interests connected with that company by which it has been able to assist its employees in buying homes. The plan is very simple and is as follows:

The employee selects his home in any part of the city that he may desire, without any dictation or suggestion of any kind from the company, except that the price paid shall not be in excess of that which the company deems to be a fair price. The company's attorneys examine the abstract of title without charge to the employee. The property is then purchased for cash, the employee paying 10 per cent on the purchase price or as much more as he may desire, and the company paying the rest. The contract between the company and employee requires that the latter shall refund his loan from the company at the rate of \$1 a month for each \$100 of the principal of the loan, and that he will pay interest at the rate of 5 per cent per annum on the monthly balance, the employee having the right to pay as much more on the principal as he may desire at any time. The contract further provides that payments will be suspended during sickness. If the employee leaves the service of the company, either voluntarily or involuntarily, he may carry on the contract the same as if he had remained in the service.

### MANY EMPLOYEES PURCHASE HOMES

There are about 185 regular employees of the company and 145 contracts have been issued. Approximately \$265,000 has already been loaned by the company and approximately \$130,000 has been repaid on the principal. No contract has been forfeited, as no employee has failed to comply with the contract. Over 50 per cent of the employees have paid in more than the contract called for.

Some time ago the company took out a group life insurance policy for its employees with a large life insurance company, covering the lives of all its employees in the sum of \$1,000 each. The premiums on this policy are wholly paid by the company, and it has been found a great aid to the widow of an employee in caring for any unpaid balance that there may have been on the home contract at the time of the husband's death.

As shown by the large number of employees who have taken advantage of this plan, it is considered a desirable one by them. The company considers itself benefited because it believes that a home-owning employee is apt to be more reliable and careful than one who is not such a property holder. The plan has also tended to create favorable public sentiment, because the public looks with favor upon every plan which results in an increase in the number of home owners and taxpayers in the community.

\*This article is based on material included in the brief submitted to the Charles A. Coffin Prize Committee of the American Electric Railway Association by the company named.



# Traffic Increasing in Populous States

Census Figures for Eight More States and the District of Columbia Show that More Passengers Were Carried in 1922 than in 1917 in Every Case Except Ohio—California Leads with 46.5 per Cent Increase

THE healthy condition of the electric railway industry in the more important states is shown by the figures recently released by the Bureau of the Census. Earlier figures for sparsely settled states showed slight decreases in passenger traffic in several cases, but in the more thickly populated districts the passengers carried in 1922 was substantially greater than in 1917.

**Georgia**—The figures show a slight decrease in track mileage while passenger traffic increased by 14.6 per cent in 1922 as compared with 1917. Gross railway operating revenues aggregated \$7,703,960, an increase of 52.2 per cent and net income from all sources made a gain of 106.4 per cent.

	1922	1917	Per Cent of Increase, 1917-1922
Number of operating companies....	11	13	
Miles of single track operated	468.66	473.31	*1.0
Number of cars, all types.....	824	777	6.0
Number of electric locomotives.....	1	1	
Number of persons employed.....	4,177	3,669	13.8
Salaries and wages.....	\$5,223,143	\$2,838,349	84.0
Primary horsepower, total.....	213,295	201,243	6.0
Kilowatt capacity of generators.....	139,620	129,282	8.0
Current generated, kilowatt-hours	376,846,155	319,184,303	18.1
Current purchased, kilowatt-hours	71,458,016	45,506,100	57.0
Passengers carried.....	**130,718,221	114,021,766	14.6
Revenue car mileage.....	22,619,406	20,907,644	8.2
Railway operations, revenues.....	\$7,703,960	\$5,060,481	52.2
Railway operations, expenses.....	\$5,777,707	\$2,915,480	98.2
Net revenue, railway operations...	\$1,926,253	\$2,145,001	*10.2
Auxiliary operations, revenues †...	\$11,303,937	\$5,086,031	122.3
Auxiliary operations, expenses.....	\$6,334,920	\$2,572,419	146.3
Net revenues, auxiliary operations	\$4,969,017	\$2,513,612	97.7
Net operating revenues.....	\$6,895,270	\$4,658,613	48.0
Taxes assignable to railway operations.....	\$1,265,217	\$708,769	78.5
Operating income.....	\$5,630,053	\$3,949,844	42.5
Non-operating income.....	\$488,806	\$338,601	44.4
Gross income.....	\$6,118,859	\$4,288,445	42.7
Interest and other deductions from gross income.....	\$3,963,152	\$3,244,265	22.2
Net income.....	\$2,155,707	\$1,044,180	106.4

\* Denotes decrease.  
 † Chiefly revenues from electric light and power departments of electric railways.  
 ‡ Two companies with 7.82 miles of track which reported in 1917 discontinued operations prior to 1922.  
 § Includes 27.32 miles in 1922, and 33.91 miles in 1917 lying outside of the state, but owned by companies within the state, and excludes 8 miles in 1922 and 10.29 miles in 1917 operated in the state but owned by companies outside the state.  
 \*\* In addition there were 8,000 passengers carried by two motor buses operated by electric railway companies.

**Ohio**—The figures show a decrease of 6.8 per cent in track mileage accompanied by a decrease of 6.5 per cent in the number of passengers carried. Gross railway operating revenues amounted to \$62,329,336 in 1922, an increase of 31.6 per cent as compared with 1917; operating expenses increased 42 per cent and net income made a gain of 18.9 per cent.

	1922	1917	Per Cent of Increase, 1917-1922
Number of operating companies....	71	74	
Miles of single track operated	4,008.50	4,299.18	*6.8
Number of cars, all types.....	6,165	7,041	*12.4
Number of electric locomotives.....	18	20	
Number of persons employed.....	22,265	22,853	*2.6
Salaries and wages.....	\$29,904,803	\$19,824,059	50.9
Primary horsepower, total.....	393,296	518,482	*24.1
Kilowatt capacity of generators.....	281,371	338,441	*16.8
Current generated, kilowatt-hours	623,119,915	1,005,108,892	*38.0
Current purchased, kilowatt-hours	434,535,837	190,291,931	128.4
Passengers carried.....	\$966,725,637	1,034,245,928	*6.5
Revenue car mileage.....	141,247,669	153,468,636	*8.0
Railway operations, revenues.....	\$62,329,336	\$47,369,242	31.6
Railway operations, expenses.....	\$47,253,403	\$33,281,662	42.0
Net revenues, railway operations...	\$15,075,933	\$14,087,580	7.0
Auxiliary operations, revenues.....	†10,388,877	\$10,439,915	*0.5
Auxiliary operations, expenses.....	\$5,299,987	\$6,881,791	*23.0
Net revenues, auxiliary operations	\$5,088,890	\$3,558,124	43.0
Net operating revenues.....	\$20,164,823	\$17,645,704	14.3
Taxes assignable to railway operations.....	\$5,480,235	\$3,625,427	51.2
Operating income.....	\$14,684,588	\$14,020,277	4.7
Non-operating income.....	\$1,939,488	\$1,091,873	77.6

	1922	1917	Per Cent of Increase, 1917-1922
Gross income.....	\$16,624,076	\$15,112,150	10.0
Interest and other deductions from gross income.....	\$10,738,532	\$10,160,860	5.7
Net income.....	\$5,885,544	\$4,951,290	18.9

\* Denotes decrease.  
 † Reduction due to mergers and to companies which have discontinued operations.  
 ‡ Chiefly revenues from electric light and power departments of electric railways.  
 § Includes 123.40 miles of track in 1922 and 136.57 miles in 1917 lying outside the state, but owned by companies within the state, and excludes 93.03 miles in 1922 and 73.50 miles in 1917 operated in the state, but owned by companies outside the state.  
 ¶ In addition there were 2,637,352 passengers carried by fifty-two motor buses operated by electric railway companies.

**Illinois**—The figures show a slight decrease in track mileage and an increase of 5.3 per cent in the number of passengers carried. Gross railway operating revenues amounted to \$100,762,053 in 1922, an increase of 57.6 per cent as compared with 1917; operating expenses increased 91.7 per cent and net income made a gain of 34.5 per cent.

	1922	1917	Per Cent of Increase, 1917-1922
Number of operating companies....	170	75	
Miles of single track operated	3,458.50	3,478.47	*0.6
Number of cars, all types.....	9,496	9,510	*0.1
Number of electric locomotives.....	38	29	
Number of persons employed.....	28,429	24,229	17.3
Salaries and wages.....	\$50,599,171	\$23,977,886	111.0
Primary horsepower, total.....	189,809	147,722	28.5
Kilowatt capacity of generators.....	150,785	103,475	45.7
Current generated, kilowatt-hours	324,376,010	256,981,900	26.2
Current purchased, kilowatt-hours	923,817,630	940,766,524	*1.8
Passengers carried.....	**1,753,500,547	1,665,552,944	5.3
Revenue car mileage.....	230,126,979	225,444,667	2.1
Railway operations, revenues.....	\$100,762,053	\$63,953,123	57.6
Railway operations, expenses.....	\$71,558,177	\$37,322,057	91.7
Net revenues, railway operations...	\$29,203,876	\$26,631,066	9.7
Auxiliary operations, revenues †...	\$5,974,979	\$2,560,711	133.3
Auxiliary operations, expenses.....	\$3,730,279	\$1,426,292	161.5
Net revenues, auxiliary operations	\$2,244,700	\$1,134,419	97.9
Net operating revenues.....	\$31,448,576	\$27,765,485	13.3
Taxes assignable to railway operations.....	\$6,074,306	\$5,252,745	15.6
Operating income.....	\$25,374,270	\$22,512,740	12.7
Non-operating income.....	\$2,232,793	\$1,694,417	31.8
Gross income.....	\$27,607,063	\$24,207,157	14.0
Interest and other deductions from gross income.....	\$16,350,221	\$15,835,140	3.3
Net income.....	\$11,256,842	\$8,372,017	34.5

\* Denotes decrease.  
 † Reduction due to mergers and to companies which have discontinued operations.  
 ‡ Chiefly revenues from electric light and power departments of electric railways.  
 § Includes 91.96 miles in 1922 and 85.96 miles in 1917 lying outside the state, but owned by companies within the state, and excludes 47.61 miles in 1922 and 48.92 miles in 1917 operated in the state, but owned by companies outside the state.  
 \*\* In addition there were 509,284 passengers carried by twelve motor buses operated by electric railway companies.

**Maryland and the District of Columbia**—The figures show a slight decrease in track mileage and an increase of 11.5 per cent in the number of passengers carried. Gross railway operating revenues amounted to \$32,579,193 in 1922, an increase of 61.9 per cent as compared with 1917; operating expenses increased 90.2 per cent and net income made a gain of 30 per cent.

	1922	1917	Per Cent of Increase, 1917-1922
Number of operating companies....	19	19	
Miles of single track operated	1,041.28	1,059.55	*1.7
Number of cars, all types.....	3,755	3,817	*1.6
Number of electric locomotives.....	5	7	
Number of persons employed.....	10,686	9,431	13.3
Salaries and wages.....	\$15,123,861	\$7,625,059	98.3
Primary horsepower, total.....	77,265	118,353	*34.7
Kilowatt capacity of generators.....	59,305	77,592	*23.6
Current generated, kilowatt-hours...	138,663,405	125,412,872	10.6
Current purchased, kilowatt-hours...	287,584,529	209,525,220	37.3
Passengers carried.....	††573,331,094	514,063,743	11.5
Revenue car mileage.....	\$73,320,143	62,989,623	6.9
Railway operations, revenues.....	\$32,579,193	\$20,119,262	61.9
Railway operations, expenses.....	\$22,323,750	\$11,735,843	90.2
Net revenue, railway operations...	\$10,255,443	\$8,383,419	22.3
Auxiliary operations, revenues	\$2,899,897	\$1,170,588	147.7
Auxiliary operations, expenses.....	\$1,490,230	\$760,736	95.9



	1922	1917	Per Cent of Increase 1917-1922
Net revenues, auxiliary operations...	\$1,409,667	\$409,852	243.9
Net operating revenues.....	\$11,665,110	\$8,793,271	32.7
Taxes assignable to railway operations.....	\$2,886,332	\$1,695,551	70.2
Operating income.....	\$8,778,778	\$7,097,720	23.7
Non-operating income.....	\$1,490,884	\$1,293,047	15.3
Gross income.....	\$10,269,662	\$8,390,767	22.4
Interest and other deductions from gross income.....	\$6,617,918	\$5,580,887	18.6
Net income.....	\$3,651,744	\$2,809,880	30.0

\* Denotes decrease; percentages not shown where base is less.  
 \*\* Includes 4.70 miles in 1922 and 1917 lying outside this area, but owned by companies within this area, and excludes 26.24 miles in 1922 and 16.59 miles in 1917 operated in this area, but owned by companies outside this area.  
 †† In addition there were 294,013 passengers carried by nine motor buses operated by electric railway companies.  
 ‡ Chiefly revenues from electric light and power departments of electric railways.

**Pennsylvania**—The figures show a slight increase in track mileage and an increase of 9.7 per cent in the number of passengers carried. Gross railway operating revenues amounted to \$102,077,951, an increase of 44.4 per cent as compared with 1917; operating expenses increased 72.2 per cent and net income made a gain of 10.3 per cent.

	1922	1917	Per Cent of Increase, 1917-1922
Number of operating companies...	†117	119	*1.7
Miles of single track operated...	4,326.74	4,324.41	0.1
Number of cars, all types.....	8,626	9,267	*6.9
Number of electric locomotives.....	7	5	...
Number of persons employed.....	30,570	28,557	7.0
Salaries and wages.....	\$46,714,521	\$25,142,481	85.8
Primary horsepower, total.....	238,078	250,483	*5.0
Kilowatt capacity of generators.....	164,718	165,078	*0.2
Current generated, kilowatt-hours	281,472,485	395,393,553	*28.8
Current purchased, kilowatt-hours	726,398,081	573,562,988	26.6
Passengers carried.....	1,667,889,553	1,520,378,517	9.7
Revenue car mileage.....	199,222,010	204,627,827	*2.6
Railway operations, revenues.....	\$102,077,951	\$70,673,008	44.4
Railway operations, expenses.....	\$74,058,711	\$42,998,469	72.2
Net revenues, railway operations.....	\$28,019,240	\$27,674,539	1.2
Auxiliary operations, revenues...	\$2,156,004	\$881,729	144.5
Auxiliary operations, expenses...	\$1,434,807	\$523,272	173.9
Net revenues, auxiliary operations..	\$721,197	\$358,007	101.4
Net operating revenues.....	\$28,740,437	\$28,032,546	2.5
Taxes assignable to railway operations.....	\$4,976,665	\$3,256,235	52.8
Operating income.....	\$23,763,772	\$24,776,311	*4.1
Non-operating income.....	\$4,336,789	\$3,670,219	18.2
Gross income.....	\$28,100,561	\$28,446,530	*1.2
Interest and other deductions from gross income.....	\$21,502,058	\$22,464,591	*4.3
Net income.....	\$6,598,503	\$5,981,939	10.3

\* Denotes decrease.  
 † Reduction due to mergers and to companies which have discontinued operations.  
 ‡ Chiefly revenues from electric light and power departments of electric railways.  
 ¶ Includes 31.79 miles in 1922 and 29.22 miles in 1917 lying outside the state, but owned by companies within the state, and excludes 149.90 miles in 1922 and 166.92 miles in 1917 operated in the state, but owned by companies outside the state.

**California**—The figures show a slight increase in track mileage and an increase of 46.5 per cent in the number of passengers carried. Gross railway operating revenues amounted to \$57,759,996 in 1922, an increase of 70 per cent as compared with 1917. Operating expenses increased 69.8 per cent during the 5-year period and net income aggregated \$2,293,934 in 1922 as compared with a deficit of \$3,823,179 in 1917.

	1922	1917	Per Cent of Increase, 1917-1922
Number of operating companies...	†29	32	...
Miles of single track operated.....	3,053.07	3,022.08	1.0
Number of cars, all types.....	6,016	5,542	8.6
Number of electric locomotives.....	76	28	...
Number of persons employed.....	18,794	15,977	17.6
Salaries and wages.....	\$28,717,870	\$16,217,815	77.1
Primary horsepower, total.....	7,000	48,070	*85.4
Kilowatt capacity of generators...	6,500	30,200	*78.5
Current generated, kilowatt-hours	584,020,073	500,094,869	16.8
Current purchased, kilowatt-hours	**935,446,247	638,632,142	46.5
Passengers carried.....	138,527,994	130,402,420	6.2
Revenue car mileage.....	\$57,759,996	\$33,982,748	70.0
Railway operations, revenues.....	\$43,436,899	\$25,582,252	69.8
Net operating revenues.....	\$14,323,097	\$8,400,496	70.5
Taxes assignable to railway operations.....	\$3,331,280	\$2,072,814	60.7
Operating income.....	\$10,991,817	\$6,327,682	73.7
Non-operating income.....	\$677,638	\$436,951	55.1
Gross income.....	\$11,669,455	\$6,764,633	72.5
Interest and other deductions from gross income.....	\$9,375,521	\$10,587,812	*11.4
Net income.....	\$2,293,934	\$3,823,179	...

\* Denotes decrease.  
 † Reduction due to mergers and to companies which have discontinued operations.  
 ¶ All generating equipment reported in 1922 was idle, and in 1917 the greater part of the power equipment reported was not in operation.  
 \*\* In addition there were 2,826,815 passengers carried by fifty-five motor buses operated by electric railway companies.

**Louisiana**—The comparison of 1922 operations with those of 1917 are influenced to a considerable extent by the fact that in 1922 one of the largest companies in the state furnished a combined report covering both its railway and electric light and power departments, while in 1917 separate returns were secured and the data relating to the production and sale of electric current were included in the special report on this subject and not in the statistics relating to railway operations. This change in method of reporting is due primarily to a reorganization of the company in question.

The figures show a decrease of 7.8 per cent in track mileage and an increase of 22.8 per cent in the number of passengers carried. Gross railway operating revenues amounted to \$9,448,195 in 1922, an increase of 60.6 per cent; operating expenses increased 83.1 per cent and net income made a gain of 198.6 per cent.

	1922	1917	Per Cent of Increase, 1917-1922
Number of operating companies....	†9	11	...
Miles of single track operated.....	304.80	330.59	*7.8
Number of cars, all types.....	848	831	2.0
Number of persons employed.....	4,768	3,169	50.5
Salaries and wages.....	\$6,544,744	\$2,260,429	189.5
Primary horsepower, total.....	94,345	59,859	57.6
Kilowatt capacity of generators.....	77,425	41,128	88.3
Current generated, kilowatt-hours	202,759,244	132,462,292	53.1
Current purchased, kilowatt-hours	6,615,333	5,314,781	24.5
Passengers carried.....	164,593,374	134,017,669	22.8
Revenue car mileage.....	20,428,933	23,832,650	*14.3
Railway operations, revenues.....	\$9,448,195	\$5,882,095	60.6
Railway operations, expenses.....	\$6,828,380	\$3,728,727	83.1
Net revenues, railway operations...	\$2,619,815	\$2,153,368	21.7
Auxiliary operations, revenues...	\$6,955,027	\$236,731	2,837.9
Auxiliary operations, expenses....	\$4,113,534	\$126,870	3,142.3
Net revenues, auxiliary operations	\$3,841,493	\$109,861	2,486.4
Net operating revenues.....	\$5,461,308	\$2,263,229	141.3
Taxes assignable to railway operations.....	\$1,437,237	\$561,085	156.2
Operating income.....	\$4,024,071	\$1,702,144	136.4
Non-operating income.....	\$114,109	\$789,740	*85.6
Gross income.....	\$4,138,180	\$2,491,884	66.1
Interest and other deductions from gross income.....	\$2,309,483	\$1,879,425	22.9
Net income.....	\$1,828,697	\$612,459	198.6

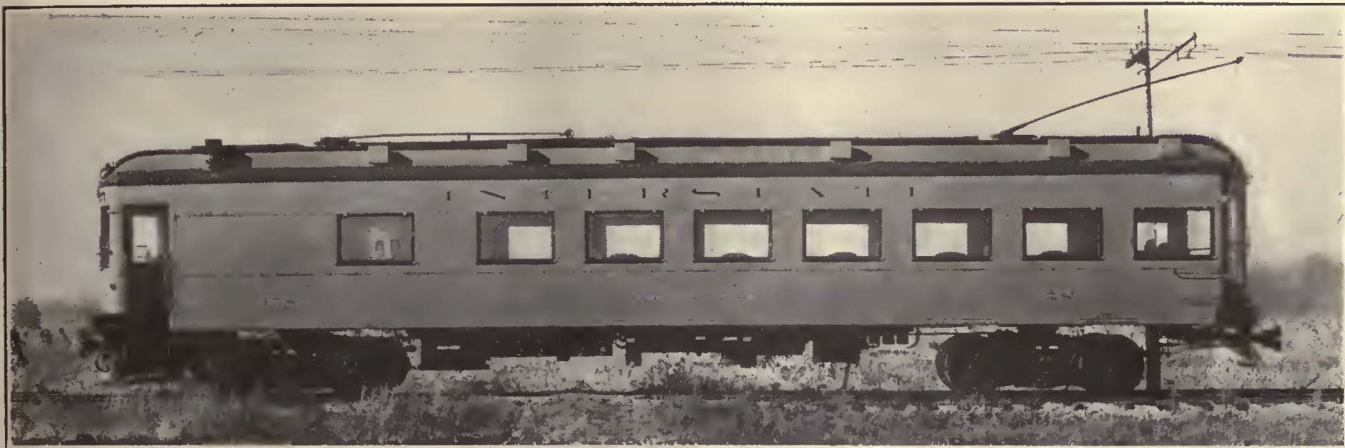
\* Denotes decrease.  
 † Reduction due to mergers and to companies which have discontinued operations.  
 ‡ Chiefly revenues from electric light and power departments of electric railways.

**Missouri**—The figures show a slight increase in track mileage and an increase of 4.8 per cent in the number of passengers carried. Gross railway operating revenues amounted to \$35,227,297 in 1922, an increase of 49.4 per cent during the 5-year period, but owing to a more rapid increase in expenses, net income shows a deficit of \$183,118 in 1922 as compared with a net income of \$1,363,367 in 1917.

	1922	1917	Per Cent of Increase, 1917-1922
Number of operating companies....	†19	20	...
Miles of single track operated.....	1,170.58	1,144.28	2.3
Number of cars, all types.....	3,154	3,004	5.0
Number of electric locomotives.....	6	7	...
Number of persons employed.....	11,318	10,522	7.6
Salaries and wages.....	\$17,055,620	\$9,090,599	87.6
Primary horsepower, total.....	161,527	136,348	18.5
Kilowatt capacity of generators....	106,800	100,555	6.2
Current generated, kilowatt-hours	198,934,774	300,988,152	*33.9
Current purchased, kilowatt-hours	187,337,006	184,192,770	1.7
Passengers carried.....	**692,747,054	660,703,957	4.8
Revenue car mileage.....	80,657,516	80,670,043	...
Railway operations, revenues.....	\$35,227,297	\$23,584,486	49.4
Railway operations, expenses.....	\$27,210,052	\$16,035,391	69.7
Net revenues, railway operations...	\$8,017,245	\$7,549,095	6.2
Auxiliary operations, revenues...	\$1,651,055	\$1,763,233	*6.4
Auxiliary operations, expenses....	\$1,178,820	\$1,334,160	*11.6
Net revenues, auxiliary operations	\$472,235	\$429,073	10.1
Net operating revenues.....	\$8,489,480	\$7,978,168	6.4
Taxes assignable to railway operations.....	\$2,721,326	\$1,767,914	53.9
Operating income.....	\$5,768,154	\$6,210,254	*7.1
Non-operating income.....	\$472,983	\$170,259	177.8
Gross income.....	\$6,241,137	\$6,380,513	*2.2
Interest and other deductions from gross income.....	\$6,424,255	\$5,017,146	28.0
Net income.....	\$183,118	\$1,363,367	...

\* Denotes decrease.  
 † Reduction due to mergers and to companies which have discontinued operations.  
 ‡ Chiefly revenues from electric light and power departments of electric railways.  
 ¶ Includes 98.74 miles in 1922 and 76.14 miles in 1917 lying outside the state but owned by companies within the state, and excludes 26.39 miles in 1922 and 25.51 miles in 1917 operated in the state but owned by companies outside the state.  
 § Reduction in current generated due chiefly to change in operating conditions of one company which produced a large quantity of current for sale in bulk in 1917 while in 1922 only a relatively small amount was generated for sale.  
 \*\* In addition there were 1,088,295 passengers carried by thirteen motor buses operated by electric railway companies.





Combination Club, Observation and Dining Car of Louisville-Indianapolis Line

# Interstate Starts Dining Car Service

Comfort and Luxury of the Interior Fittings and the Wide Variety Offered by the Menu Are Features of the Combination Club-Dining-Observation Car Service from Indianapolis to Louisville

NEW equipment recently put in operation in the all-steel limited trains of the Interstate Public Service Company rivals in the commodiousness of its appointments the rolling stock of the crack trains of the largest steam railroads. These luxurious cars, costing \$35,000 each, are in service on the Dixie Flyers leaving Indianapolis at 11 o'clock in the morning and 5 o'clock in the afternoon, reaching Louisville in three hours and forty-five minutes. Returning they operate on the Hoosier Flyers leaving Louisville at 11:45 a.m. and 5:45 p.m. Later it is expected that additional cars of this type will be used on other trains also.

The cars are combination club, observation and dining cars. Two-thirds of the car interior is devoted to a passenger compartment containing twenty-two individual chairs, upholstered in soft Spanish leather. Beside each seat is an electric push button connected

with an annunciator. At one end of this compartment there is a long comfortable seat upholstered in the same material. This easily accommodates four people, thus increasing the passenger capacity to twenty-six. The rear end is arranged for observation with heavy plate glass windows extending nearly from floor to roof. In conjunction with the possibility of moving the chairs to any desired position, this arrangement enables the passenger to get with the utmost comfort an excellent view of the country through which the car is passing. In this respect the car excels the typical open platform observation car on steam railroads, as all dust is shut out.

Side windows are also of plate glass and are equipped for winter with outside storm sash. Screens may be substituted in summer for the storm windows. The artificial lighting arrangements are attractive, consist-

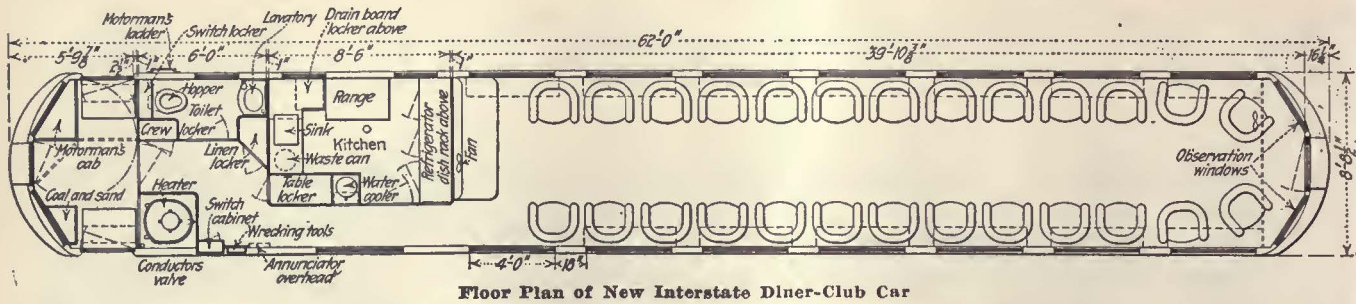


There Are Twenty-two Individual Leather Upholstered Chairs in the Club Car and Seats for Four More



Showing How Tables Are Put In and Chairs Rearranged for Dining Service





Floor Plan of New Interstate Diner-Club Car

ing of 100-watt dome lights in the center of each of the beams in the ceiling and 50-watt lights along the side. In addition there are emergency lights which operate from a storage battery whenever the power is off the car.

Portable tables which may be adjusted for the seating of two or four people, as desired, are part of the dining equipment. Place for the tables is made by simply rearranging the chairs. An extensive menu is provided, giving the passenger almost as large a choice of viands as he would have in a good hotel. Each car will have a crew consisting of a chef and a porter.

The kitchens are equipped in the same way as the kitchens of modern steam railroad dining cars. There is a cooking range, an ice box, provision locker and all other necessary features. The silver and china service are of the same high grade as the other equipment. The dining car service of the Interstate Public Service Company has been placed in charge of C. C. Mowry, who until recently was assistant superintendent of the dining car service on the Monon Railroad.

African mahogany of a light shade is used for interior trim. The ceiling is beamed in the same wood with white enamel between the beams. The side walls are entirely of mahogany, as is also the kitchen exterior and the various compartments and cabinets at the end of the car. Extreme simplicity marks the interior arrangement and this adds to the pleasing effect.

A hot water heating system has been installed for winter operation. In addition to this, however, there is an electric heating system, which may be used in case of emergency or on cool days in the spring and fall when the regular heaters are not required. Each car is equipped with three large electric fans, and a blower in the kitchen to remove whatever fumes there may be from the cooking.

The cars were built by the American Car & Foundry Company and are 62 ft. in length over all and 9 ft. 2 1/2 in. in width. Fully equipped, they weigh approximately 100,000 lb. Control has been so arranged that they can be operated as single units, although they will usually be used in multiple-unit trains, with a steel motor coach as the leading car. Each of the new cars is equipped with two G.E. 254 150-hp. motors on the front truck, geared for a speed of 70 m.p.h.

The additional fare on these cars between Indianapolis and Louisville is 75 cents per chair. Between Indianapolis and Columbus, Ind., the extra fare is 50 cents, and between Louisville and Seymour it is the same. It is 75 cents a chair from Louisville to all points north of Seymour and from Indianapolis to all points south of Tremore. It is the first service of this kind that has been established in the Indiana-Ohio interurban district and is proving very popular with the public.

## Coal Consumption Cut a Third in Three Years

By Attention to All Sources of Power Waste, Including Uneconomical Car Operation, Union Traction Has Saved Fuel and Reduced Maintenance Cost

FOR several years the Union Traction Company of Indiana has had under way a continuous effort to reduce power cost with the result that there has been a gradual reduction in coal consumption as follows: 1919, 124,030 tons; 1920, 102,573 tons; 1921, 85,224 tons; and 1922, 81,998 tons. Along with this has gone fairly steady increase in car mileage, from 7,813,419 in 1919 to 7,885,644 in 1920, 7,871,025 in 1921 and 8,330,112 in 1922.

An important feature of the campaign has been the use of meters on the cars, but it has also included attention to track bonding, the use of lighter equipment and its proper allocation, modification of gear ratio where

°° INTERSTATE °°

**Dining Car Service**

**MENU**

... Special for To-day ...			
No. 1.	Farm Sausage, Sweet Potatoes, Rolls, Pie, Coffee.....	.80	le, 25
No. 2.	Spanish Omelet, Potatoes, Rolls, Grape fruit, Coffee..	.80	30
No. 3.	Salsbury Steak Creole, Potatoes, Rolls, Pie, Coffee....	.90	20
No. 4.	Ind. Chicken Pie, Rolls Desert, Coffee.....	1.00	ps, 50
No. 5.	Roast Loin of Pork, Apple Sauce, Potatoes, Rolls, Pie, Coffee.....	1.10	50
No. 6.	Small Steak, Potatoes, Rolls Pie, Coffee.....	1.25	hd, 75
			5
			RR, 25
			20
Salads	Lettuce, 20 Sliced Tomatoes, 25	Tomatoation, 40	
Breads, etc	Hot Rolls, 10 Dry or Buttered Toast, 15	Milk Toast, 30	
Deserts	Preserved Peaches, Cherries or Strawberries, 25 Preserved Figs with Cream, 40 Stewed California Prunes, 25 Orange Marmalade, 25		
Cheese and Crackers	Swiss, 25 Chb., 25 Toasted Saltine Wafers, 10	American, 20	
Coffee, Tea Milk, etc.	Coffee, Pot. 15 Tea, Pot. 15 Cocoa, Pot. 20. Milk Individual Bottle, 15 Butter Milk, Glass, 10		
BERT WEEDON, TRAFFIC MANAGER.		C. B. MOWERY, SUPT. DINING CAR SERVICE	
INDIANAPOLIS, INDIANA			

The Interstate Menu Offers a Wide Variety



desirable, best possible maintenance of cars, and adjustment of brakes, conservation in shops, substations, etc.

Accompanying the fuel saving there was a reflex influence on the equipment maintenance, which cost \$45,000 less in 1921 than in 1920 and \$14,000 less in 1922 than in 1921. A large part of this result was clearly attrib-

ical operation without losing time. The men read the meters and make their own records.

The local superintendents gather the cards daily and transmit them to the safety engineer, who files each man's cards for a month together. The results for each month are tabulated by lines, with the corresponding data for the preceding month. A copy of the summary is posted on the terminal bulletin board, with a table of totals for the several terminals. For the interurban passenger motor cars, the grand totals for the system are graphed, as illustrated, for comparison with the preceding year.

In order to impress the men with the relation between energy consumption and coasting, demonstrations have been conducted on certain days as follows: The men were asked to estimate their coasting on given trips, by counting poles, and to read their meters correspondingly. Comparisons were then made with the energy consumption immediately preceding. The coasting was found to range from 30 to 36 per cent.

TRIP NO.	MOTOR NO.	TRAILER NO.	FROM	TO	READING ON	READING OFF	K. W. H. USED	MILES	REPORT B. O. EQUIPMENT DEFECTS, UNUSUAL, ETC.
1-62	405		and	Alex	3920	3947	27		
1-707	405		Alex	Tipton	5947	5988	41		
1-316	405		Tipton	Kokomo	5988	6023	35		
EX	405		Kokomo	Tipton	6050	6090	40		
			Tipton	Alex	6090	6138	48		
			Alex	and	6138	6173	35		
							226		

Name A Bennett Badge No. 49 Date 6/25 Car No. 215  
 Time On: \_\_\_\_\_ A. M. \_\_\_\_\_ P. M. Time Off: \_\_\_\_\_ A. M. \_\_\_\_\_ P. M.  
 Loc W. Marion To What Point N. Rutter

REMARKS: (Here report any B. O. equipment or unusual operating conditions of any kind)  
OK

Reading Off 0512  
 Reading On 0396  
 K. W. H. Used 114  
 No. Round Trips 12

NOTE—MOTORMEN WILL USE SEPARATE CARD FOR EACH PERIOD WORKED ON DIFFERENT CAR OR LINE OPERATED  
 Form No. 10-2733 10m 4-23

Cards Used for Recording Energy Consumption on I. U. T. Cars Above, for interurban cars. Below, for city and suburban cars.

## The Readers' Forum

### Railways Fail to Sell Themselves to Graduates

UNIVERSITY OF PITTSBURGH

PITTSBURGH, PA., Dec. 13, 1923.

To the Editors:

I note with interest your editorial in the *ELECTRIC RAILWAY JOURNAL* for Dec. 1 under the title "Transportation Field Needs to Be 'Sold' to Faculties." This thought is similar to other editorials and articles which have been appearing in the technical press for some time with reference to many public utilities. I feel that there is another point of view to be considered in a question of this kind. I think you would find in a survey of the engineering faculties of this country that they all appreciate perhaps as much as you do the importance of not only the specialized transportation field but other special utilities.

Did it ever occur to you that engineering teachers have certain ethical obligations in connection with problems of this kind? It seems to me that it would be entirely out of place for engineering teachers to emphasize one or more public utilities at the expense of others. In my own case, for example, I am probably more interested in the transportation field than any other phase of engineering. And yet I am very careful in presenting this matter to my engineering graduates for the reason outlined.

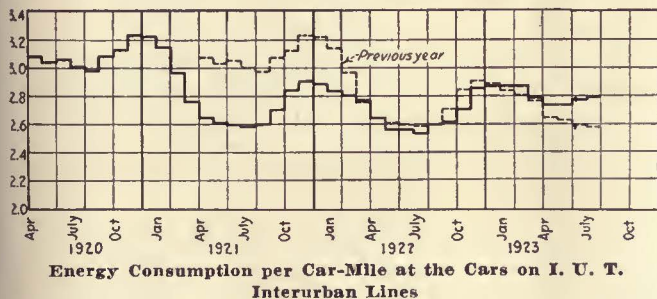
I do feel, however, that in this particular case there is a solution for the problem. During the number of years in which I have been connected with engineering teaching, I have been impressed by the absence of any definite program on the part of railway organizations to "sell" themselves to engineering graduates. It is now commonly accepted practice among our leading electrical manufacturing and many utility companies to visit the leading universities and technical schools late in the senior year for the purpose of acquainting graduating students with opportunities in their respective fields. Herein, as I see it, lies the explanation of the failure to build up the personnel of many of our transportation utilities.

H. E. DYCHE,

Professor and Head of Department of  
Electrical Engineering.

utable to the better handling of cars which came about through an effort to save energy by systematic coasting.

During the spring of 1920 the company installed Economy meters on its interurban cars. The company's safety engineer, R. E. Luellen, was put in charge of energy-saving activities.\* It took some time to get the work organized, but by the end of the year it was in full swing. The result was a reduction from the consumption of 4.339 kw.-hr. per car-mile at the direct-current switchboard in 1920 to 3.803 kw.-hr. in 1921, or 12.3 per cent. The reduction for the following year



over 1921 was to 3.629 kw.-hr., or 4.6 per cent. Thus, the saving for 1922 as compared with 1920 was 16.35 per cent. The fact that it was possible to make an additional saving the second year shows that the novelty of the 1921 campaign was not an important factor in its success. The energy consumption at the car for the past three years or more is shown on the accompanying graph.

In connection with the manufacturer's engineers, the railway company devised record cards adapted to its needs, one for the interurban cars, and one for the city and suburban cars, as illustrated. The backs of the cards are utilized to explain means of securing econom-

\*See article by Mr. Luellen in the issue of this paper for Oct. 22, 1921, page 723.



# Association News & Discussions

## Mid-Year Dinner Committees to Be Organized

A MEETING of local members of the committee on arrangements for the American Electric Railway Association Midyear Meeting was held at St. Louis, Friday, Dec. 21, at which the most important business was the report of the organization committee. This committee, which is in reality a committee on committees, has the responsibility of naming the committees and sub-committees, outlining their duties and functions and recommending their personnel to the general chairman, W. H. Sawyer. The members of this committee are C. O. Birney, chairman; B. W. Stemmerrick, R. W. Williams, Herman Spoeherer and B. W. Frauenthal.

## Two New Committees Organized by American Association

CONVINCED that the future success of electric railways lies largely in advancing the more general use of progressive methods, the executive committee of the American Association has authorized the formation of two new committees which will, broadly speaking, conduct a first-hand survey of the industry and report on the progressive work that is being done. This survey will include not only operating methods but the improvement of public relations and other activities of importance.

Each committee as organized consists of fifteen members. The United States has been divided into seven geographical districts, and a vice-chairman has been appointed for each. These men will do the field work for their respective committees. On each committee there also is one publicity man. The other seven members of each committee are executives of broad experience.

The success of the plan will depend in great part on the personality of the vice-chairmen and their ability to inspire confidence. Each one is expected to devote at least two weeks of his time, prior to July 1, to visiting and aiding the member companies in his district, both the time and expenses of the man to be borne by his employer company. One object of these visits will be to aid companies by advising them on how other companies are meeting problems, and another to seek advice and information for the benefit of the industry as a whole. While it is hoped that eventually it will be possible for the vice-chairmen to visit all member companies and extend help when needed, in the beginning it is suggested that they make surveys of the best properties in their territories.

The result of this work at the end of a year will unquestionably be to bring aid to a good many member companies, and, at the same time, make all the companies feel that they are a more intimate part of the American Electric Railway Association. The two committees also will have a rather comprehensive survey of the industry upon which to report at the annual convention.

The personnel of the two committees follows:

### CITY OPERATION

H. B. Flowers, president New Orleans Public Service, Inc., New Orleans, La., chairman.

### Regional Vice-Chairmen

R. F. Carbutt, New York, N. Y.  
H. B. Potter, Baltimore, Md.  
C. D. Porter, Hampton, Va.  
R. W. Emerson, Cleveland, Ohio.  
F. C. Chambers, Des Moines, Iowa.  
W. E. Wood, Houston, Tex.  
W. V. Hill, San Francisco, Cal.

### Publicity

L. K. Starr, Atlanta, Ga.

### Representative of Manufacturers

E. F. Wickwire, Mansfield, Ohio.

### Members at Large

W. R. Alberger, Oakland, Cal.  
G. H. Clifford, Fort Worth, Tex.  
B. C. Edgar, Chattanooga, Tenn.  
E. M. Graham, Bangor, Me.  
C. W. Kellogg, Boston, Mass.  
C. S. MacCalla, Youngstown, Ohio.  
E. J. McIlraith, Chicago, Ill.  
J. P. Pulliam, Milwaukee, Wis.

### INTERURBAN OPERATION

Harry Reid, president Interstate Public Service Company, Indianapolis, Ind., chairman.

### Regional Vice-Chairmen

F. W. Woodcock, Philadelphia, Pa.  
H. L. Mitchell, Pittsburgh, Pa.  
Samuel Riddle, Louisville, Ky.  
J. S. Bleecker, Springfield, Ohio.  
G. W. Welsh, East St. Louis, Ill.  
V. W. Berry, Fort Worth, Tex.  
W. V. Hill, San Francisco, Cal.

### Publicity

Frank Blanchard, New York, N. Y.

### Representative of Manufacturers

E. F. Wickwire, Mansfield, Ohio.

### Members at Large

J. F. Collins, Jackson, Mich.  
V. S. Curtis, New Haven, Conn.  
H. A. Mullett, Milwaukee, Wis.  
C. E. Thompson, Highwood, Ill.  
J. C. Schade, Warsaw, Ind.

## Power Transmission and Distribution

A MEETING of the committee on power transmission and distribution of the Engineering Association was held at association headquarters Dec. 10 and 11, the first day being devoted to the assignment of subjects and discussion of their scope, while the second day was given over to meetings of the various sub-committees. Those present were C. H. Jones, chairman; M. B. Rosevear, sponsor; G. C. Hecker, special engineer; J. W. Allen, Charles Gilman, C. L. Hancock, H. D. Hawks, L. T. Hixson, H. S. Murphy, J. F. Neild, H. A. Pharo, W. J. Quinn, W. Shaake, A. Schlesinger, J. M. Waldron, F. J. White, J. H. Drew, Mr. DeVries representing Adrian Hughes, Jr., and R. W. Eaton, who also served as secretary of the committee.

F. McVittie was appointed vice-chairman.

Tentative dates for this year's meetings of the committee were discussed. It was voted to hold the next meeting at Chicago, March 10 and 11.

The subjects assigned to the committee were considered in order, and the work proposed was referred to the sub-committees. The subjects include concrete poles, ruling dimensions of approach ears, dimensions of various types of suspensions, catenary suspension, trolley wire wear and composition, temporary connection to trolley wire, trackless trolley overhead construction, review of existing standards, and signal sections of the engineering manual.

On the subject of trolley wire, it was suggested that a joint special committee be organized from members of the power distribution and equipment committees to study the whole problem of current collection. It was also proposed that members of the power distribution committee put up "test miles" of trolley wire and obtain the life history of such installations.

Attention was called to the necessity for standardization of designs of approach ears so that the parts might be made less diversified and to some extent interchangeable. The same action was considered necessary for barn hangers and other hangers used in troughs.

## Committee on Relief of Traffic Congestion

AT A meeting held at the Congress Hotel, Chicago, on Dec. 14, the T. & T. Association committee on relief of traffic congestion considered the preparation of a questionnaire to be sent out to member companies for the purpose of collecting data and studying means of relieving the increasing street con-



gestion in the larger cities. With men present from various parts of the country, it was found that all had ordinances limiting parking and providing other regulations, but that these were not proving satisfactory in relieving the congestion. Chairman Paul E. Wilson of Cleveland presided. The meeting was attended by G. B. Anderson of Los Angeles, W. E. Thompson of New York City, D. L. Fennell of Kansas City and J. V. Sullivan, sponsor, of Chicago.

### City Operation

THE committee on city operation of the American Association held its first meeting at Chicago, Dec. 14. Those in attendance were H. B. Flowers, chairman; R. F. Carbutt, R. W. Emerson, H. B. Potter and W. E. Wood, regional vice-chairman; M. E. Ailes representing L. K. Starr, publicity member; E. F. Wickwire, manufacturer representative; J. P. Pulliam, E. J. McIlraith, C. S. MacCalla and V. W. Berry representing G. H. Clifford, members at large; S. E. Emmons and E. J. Blair, guests; Labert St. Clair and G. C. Hecker of the association staff.

The secretary read the plan of organization and procedure, after which the aims and objects of the committee were discussed. As to the best method of starting the work, various plans were presented.

A number of subjects mentioned for investigation by the committee included the motor bus, traffic congestion, lightweight cars, one-man operation, power saving, etc. It was felt that one thing to which the committee might devote some attention is the question of higher schedule speeds. The slowing down of schedules in city operation was held to have brought about greater use of the motor bus and the private automobile.

H. A. Johnson, president of the Engineering Association, who was present at the afternoon session, spoke of the trips made by representatives of the Chicago, North Shore & Milwaukee Railroad and said he felt the benefits derived from these trips had crystallized President Budd's ideas and resulted in the formation of the committees on city operation and interurban operation. In his opinion the way to start the committee work was for the regional vice-chairmen to go out into their territories and visit the properties. He said that the resulting interchange of ideas would benefit both the regional vice-chairmen and the managers of the properties visited. He thought a meeting of the regional vice-chairmen should then be held in order to report and discuss what they had found.

President B. I. Budd was at the meeting for a short time and spoke of the possibility of manufacturers and bankers working out a plan for financing modern equipment to replace antiquated equipment. He pointed out what the motor bus manufacturers have done along that line. He also expressed the belief that increased speed and relief of traffic congestion are very important.

He said he thought the committee might begin to prepare publicity material for future use, stressing the expensive street widening projects and boulevards undertaken by the municipalities for motor interests, and pointing out at the same time that practically nothing of that nature has been done for the street car riders, who constitute probably 80 per cent of the general public.

Mr. Budd expressed the hope that the committees would furnish information and ideas leading to modernization and toward further development of the industry. He said the industry has not by any means reached the limit of its development, and that if we can only get rid of some of the nightmares of the past and become imbued with the desire to give better service and promote better public relations the industry will go forward rapidly. He mentioned the enthusiasm and energy displayed in the early days of the industry and said that if the committees could only arouse a part of that spirit on the part of the managements today a tremendous amount of good would result.

It was decided to hold the next meeting at New York Jan. 10.

### Interurban Operation

THE first meeting of the committee on interurban operation of the American Association was held at Chicago, Dec. 12. Those in attendance were Harry Reid, chairman; H. L. Mitchell, Samuel Riddle, G. W. Welsh, F. W. Woodcock and V. W. Berry, regional vice-chairmen; Frank Blanchard, publicity member; H. A. Mullett, C. E. Thompson and J. C. Schade, members at large; M. B. Lambert and C. L. Van Auken, guests; Labert St. Clair and G. C. Hecker of the association staff. E. F. Wickwire had come to Chicago following his recovery from a serious illness, but was unable to attend the meeting due to a relapse.

The plan of organization and procedure, referred to elsewhere in this issue of *ELECTRIC RAILWAY JOURNAL*, was read, after which the chairman outlined briefly his views regarding the scope of the committee's activity. The addition to the personnel of the committee of members at large from the Pacific Coast, the state of New Jersey and the Southeastern district was suggested.

Mr. Lambert suggested that the proposed committee activities be given wide publicity during the next two or three months. He then spoke of the opportunity presented through this committee and through the committee on city operation for the manufacturers to co-operate. He suggested that various manufacturers designate certain of their district representatives to co-operate by bringing to the attention of the regional vice-chairmen any outstanding features or improvements observed. Mr. Lambert thought the regional vice-chairmen also might bring to the attention of the manufacturers many suggestions that would be help-

ful in stimulating activity on the part of the manufacturers in responding to the needs of the industry.

In the ensuing discussion it was pointed out that it must be demonstrated to member companies that the association is attempting through the work of this committee and the committee on city operation to advance the general interests of the entire industry. Since the idea is just at its inception a great deal of discussion was devoted to ways and means of obtaining the desired information and distributing it to the member companies. It was proposed to get immediate publicity through the technical press of outstanding developments or accomplishments found. The committee agreed that such publicity should be given in advance of the committee's annual report where particularly interesting information was obtained by the regional vice-chairmen.

It was agreed that Chairman Reid would write to the manager of every interurban railway in the country advising him of the organization, plan and procedure outlined for this committee work.

President B. I. Budd, who was present at the afternoon session, expressed his appreciation to the chairman and the members of the committee for accepting the responsibility of this work. He said that he felt the help which could be rendered the industry was incalculable. Mr. Budd declared that the interurban situation was not so serious as many people thought. "I believe," he said, "that the erroneous impression regarding the situation in general is due largely to the lack of information or to the dissemination of much misinformation. A great deal of publicity is given to the weaknesses of the industry, but very little to its accomplishments." Better apparatus and tools and the more intelligent use of every known development and improvement require the dissemination of information in such shape that the application of these methods may be known to every one in the industry.

Another feature of the work discussed by Mr. Budd was the opportunity for the vice-chairmen to become acquainted in their visits with young men who are capable of development as future leaders. He suggested building up a list from which future committee men might be selected, and felt that the committee work would assist in developing these young men for the companies and for the industry, and thereby make available a flow of young men for positions of responsibility.

There was a general discussion of the relation of the motor vehicle to the industry and it was pointed out that the committee should direct its attention to this phase of the transportation problem.

Mr. Lambert suggested that the committee study the possibilities of the organization of holding companies to finance the purchase of equipment and establish central maintenance plants. He stated that his company would be



glad to place at the disposal of this committee and the committee on city operation its experts on freight haulage and on shop practice.

Mr. Blanchard felt that there has been too great a disinclination on the part of managers to establish proper and friendly contact with the newspapers, which in his opinion are the best media in a community to establish direct contact with the general public.

He urged companies whenever they have real news to give it to the newspapers, but advised against the practice of attempting to secure free advertising by offering it to the newspapers as news. He urged a proper and reasonable amount of paid advertising by the companies. He suggested that the newspapers be used to acquaint the public, particularly in the small communities, with the companies' employees. He also suggested that the companies tell the public through the newspapers how its money is being spent in the communities and show what a large percentage of its receipts are returned to the community in wages, material and other items.

### Definite Educational Plans Prepared

AT THIS year's meeting of the committee on education of the American Association, held in New York Dec. 18, the assignment of the executive committee was interpreted to instruct the committee to prepare an elementary text on electric railway economics. This the committee definitely plans to do if a way can be found to finance the undertaking. The proposed material will serve as a text for instruction in the fundamentals of electric railway service, aside from operating and mechanical considerations. These will form the basis for later plans.

The committee will at once canvass the field to learn, through the co-operating educational directors, what is now being done along educational lines by member companies.

A booklet will also be prepared for wide distribution among employees, to stimulate interest in education. This will be done with a view to impelling each employee to ask himself whether he is making the best use of the educational facilities already within his reach if he will but make the effort to utilize them.

Those present at the meeting were: Edward Dana, Boston, chairman; W. J. Edmunds, Pittsburgh; A. L. Hodges, Brooklyn, representing C. E. Morgan; A. T. Koehler, New York, National Industrial Conference Board; Myles B. Lambert, East Pittsburgh; H. H. Norris, New York; J. V. Sullivan, Chicago; Prof. W. H. Timbie, Boston. Messrs. Dana, Lambert and Executive Secretary J. W. Welsh were appointed as an executive sub-committee to inaugurate the plans of the committee as promptly as possible, and to Mr. Norris was assigned the duty of receiving suggestions as to the booklet and putting them into concrete form.



Chase Hotel, St. Louis, Where Midyear Convention Will Be Held

### Publicity for Midyear Meeting

PLANS are already under way in making arrangements and securing publicity for the Midyear Meeting of the American Electric Railway Association, to be held in St. Louis on March 4. Col. A. T. Perkins, general manager United Railways of St. Louis, is chairman of the publicity committee, which has made arrangements to secure adequate recognition for the convention. St. Louis welcomes the convention for many reasons. It calls itself the "city surrounded by the United States." With the terminals of twenty-six railroads reaching all parts of the country it is the gateway to the South and Southwest.

Among its many advantages, the city especially prides itself on its electric railways. The United Railways, which has been in receivership for some years, has now advanced to a position where the Federal Court and the Public Service Commission believe that the time for reorganization and resumption of control by the owners is at hand. The company also has the important matter of several franchise renewals on hand on the east side of the Mississippi River.

On the Illinois side also, East St. Louis is a greater industrial center than St. Louis itself. It is served by the lines of the East St. Louis & Suburban Railway and affiliated properties under the leadership of President W. H. Sawyer, who also is chairman of the committee on arrangements for the dinner. The lines of this company terminate at the west end of the Eads Bridge at Third and Washington Avenues, St. Louis. With characteristic foresight, President Sawyer already has announced that the badge of any one attending the Midyear Meeting will serve as a pass on the east side line. The McKinley lines, now absorbed by the Illinois Power & Light Corporation, have a terminal in St. Louis at Twelfth and Lucas Avenues in the heart of the business section, reaching it by means of the McKinley Bridge over the Mississippi. On the Illinois side, these lines serve Granite City, Venice, Wood River and Alton on the line to Springfield, Peoria, and other Illinois points.

The city is looking forward with great interest to the Midyear Meeting.

The Hotel Chase, St. Louis, Mo., where the Midyear Meeting is to be held, "in its appointments, furnishings, and beautiful settings is as beautiful as any in America," according to Mr. Sawyer. A street car line extends to the door of this hotel, which affords direct connection with the downtown business district in less than twenty-five minutes.

The Palm Room, in which the banquet will presumably be held, is large enough so that 950 persons can be seated with clear vision of the speakers' table. There is also the Crystal Ball Room with a seating capacity of 600, and an inclosed roof garden with a seating capacity of 600; the former probably will be the room used for the business meetings.

## News of Other Associations

### Midwest Association to Meet

THE Midwest Electric Railway Association will hold its next quarterly meeting at Springfield, Mo., January 17. There will be a morning and afternoon business session, at which several papers will be read, and a banquet in the evening with several prominent speakers. This association is composed of executives and operating officials of Missouri, Kansas, Nebraska, Oklahoma, Colorado and Arkansas.

### New York Electric Railway Association

AT A meeting of the executive committee of the New York Electric Railway Association, held last week, the date of the midyear meeting was set for Thursday, Jan. 24. The meeting will be held in the Commodore Hotel, New York City. The morning session will begin at 10 a.m. There will also be an afternoon session and an evening dinner, also at the Commodore.

Wisconsin Utilities Convention.—The 1924 convention of the Wisconsin Utilities Association, will be held April 17 and 18 at the Hotel Pfister, Milwaukee.

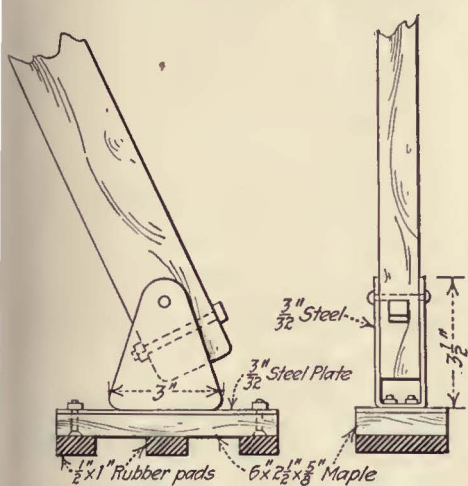


# Maintenance of Equipment

## Safety Shoe for Shop Ladder

LADDERS used in the shops of the Chicago Surface Lines are equipped with "safety shoes" of the type shown in the accompanying sketch, to prevent slipping on the concrete floor.

These shoes are made up in the shop and consist of a U-shaped bracket of  $\frac{3}{8}$ -in. thick steel riveted



This Shoe Prevents Ladder from Slipping on Concrete Floor

to a flat plate  $2\frac{1}{2}$  in. wide by 6 in. long. A maple block  $\frac{5}{8}$  in. thick is bolted to the bottom of the plate and  $\frac{1}{2}$ -in. x 1-in. rubber pads are screwed to this block. This arrangement always brings the full area of the ladder footing into contact with the floor and the rubber further prevents slipping.

## Soldering Contact Tips on M. U. Switch Group

A METHOD of fastening contact tips to the stationary contacts of switch group control on multiple-unit control cars has been worked out at the shops of the Metropolitan West Side Elevated Railway, Chicago, and has resulted in longer life to the contact tips with fewer failures of this particular part of the switch group mechanism. The contact tip is tinned on the under side after being formed to fit the stationary contact. The stationary contact is likewise tinned, and after the

machine screws which ordinarily hold the contact tip in position are driven home, the assembled contact is heated and the two parts thus sweated together.

At the time the stationary contact is tinned, sufficient solder is used to fill up the counterbored hole into which the cable lugs are screwed. This holds these lugs securely in position and prevents arcing at the point where the lugs screw into the stationary contact.

This method of fastening the contact tip has made possible the wearing of the tip down to a thickness which previously could not be allowed on account of the warping of the tip and the consequent holding of arcs when the circuit is broken. This arc, although held down to a minimum by this new method, has in the past proved rather disastrous to arc boxes or arc shields on the switch unit. These shields are made of  $\frac{1}{8}$ -in. transite, and considerable pitting and burning has been experienced. To eliminate this trouble the transite is soaked in oil, waste oil from the control cylinders being used, and the arc appears to slide over rather than pit the shield.

## Convenient Tool for Cutting Dust Guards

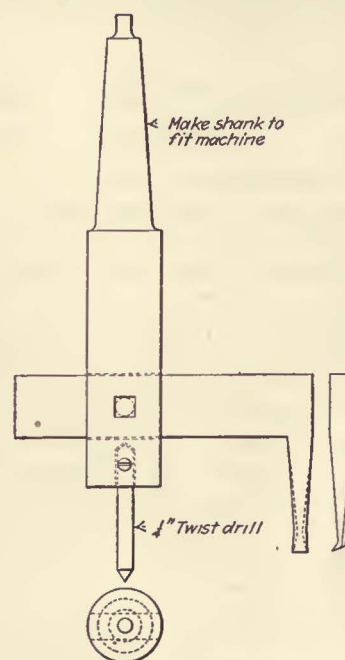
BY J. T. PORTER

Master Mechanic North Texas Traction Company, Fort Worth, Tex.

THE Northern Texas Traction Company uses standard wood dust guards for its journal boxes, and has found the tool shown in the accompanying illustration of particular service for cutting the holes accurately. It is provided with a shank with the upper part arranged to fit the particular boring machine or drill press which is to be used. The lower part of the shank has a slot in which a right-angle cutting arm fits. The cutting arm is held in position by a set screw after being adjusted to the proper location for the hole which is to be cut. In making the tool, care should be taken to see that the set screw does not work loose. A good method is to counter-sink the arm where the set screw

strikes it and then to use a locknut against the shank. The lower end of the shank is provided with a quarter-inch twist drill for accuracy in setting and to give a bottom support that will prevent vibration.

Previous to the use of this tool, the old method of cutting the holes in dust-guard boards was to mark off



Tool for Cutting Journal Box Dust Guard

the hole and then saw out the circle on a bandsaw. With this method the outer part of the board has to be cut through to get inside and make it possible to saw the circle. This cutting through the outer part of the board weakens the dust guard and frequently results in breakage. It was also almost impossible to saw out the circle accurately, and as a result when the board was slipped over the shoulder on the axle there would be open places that would let in dust.

Another method of cutting the holes which was tried without success was to clamp the board in a chuck of a speed lathe and turn the hole out. This is a great improvement over the sawing method, but difficulty was experienced when the hole was being turned from the pressure of the chuck jaws. This pressure caused the wood to spring somewhat so that when the board was finished and removed from the chuck it would



spring back and the hole would be slightly oval in shape.

By use of the tool shown in the accompanying illustration, dust guards for journal boxes can be cut on either a boring machine or a high-speed drill press. All that is necessary to hold the board in place on the bed of the machine is a clamp that will keep the board from turning or rising. The holes will be cut to exact size and will be entirely true. The use of this tool has shortened the time of cutting the holes in these boards at least 50 per cent over previous methods used. In cutting the holes better success was had by revolving the tool at a high rate of speed, as a cleaner cut hole is formed.

### Increasing Trolley Wheel Mileage\*

**A**LTHOUGH the trolley wheel is a very small part of a street car, it plays a very important part in its operation, and much time and money have been spent in perfecting current collectors. Some companies have found trolley shoes superior to the trolley wheel, but the experiments of the El Paso Electric Railway with several different trolley shoes were unsatisfactory and did not give the results which have been obtained with the trolley wheel.

The company states that its trolley wheel mileage record surpasses that of any other company in Texas, and for the past four years has been as shown in the following table.

\*This article is based on material included in the brief submitted to the Charles A. Coffin Prize Committee of the American Electric Railway Association by the company named.

Year	Miles per Trolley Wheel
1919 .....	14,000
1920 .....	18,000
1921 .....	20,000
1922 .....	22,000
1923 (based on seven months operation) .....	23,000

The company considers that this record is due largely to the fact that an expert trolley man is kept, who does nothing but supervise and inspect trolleys. They are carefully inspected each 2,000 miles, and if they show the slightest defect they are removed and placed in first-class

condition before again being put into service. At every inspection the tension of the trolley base is tested with a special weight made for that purpose, and in this way the bases are kept at uniform tension. When the trolley wheels show the least sign of wear they are removed and sent to the machine shop, where a new groove is turned. Another reason for the large mileage is the fact that the overhead is kept in first-class condition.

## New Equipment Available

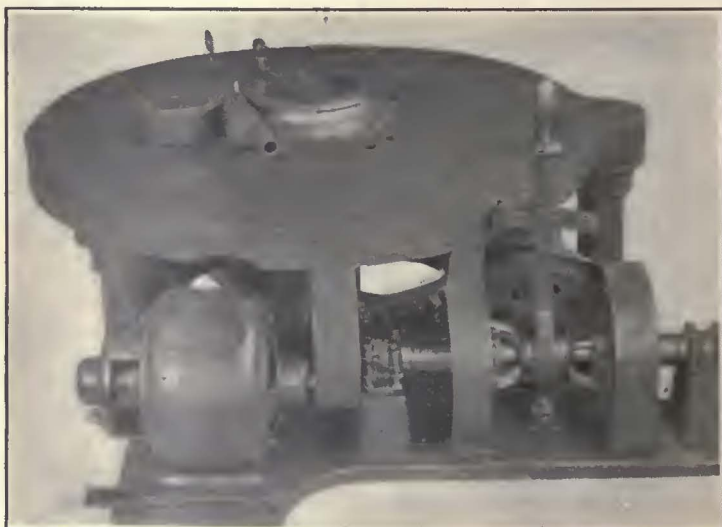
### Pipe and Bar Bending Machines

**S**EVERAL machines for bending pipes, bars and structural iron have recently been placed on the market by the Wallace Supplies Manufacturing Company, Chicago, Ill. One line operated by belt drive consists of the types 5-B, C, D and E. These machines are practically the same, except that they are arranged so that different tool equipment can be used. The 5-B machine is arranged with suitable tool equipment for bending pipes or tubes, but separate tool equipment can be furnished so that angles, channels and other shapes can be bent on this machine. This line is intended primarily for use in bending tubing, electrical conduits, water, gas, steam and air pipes up to 2 in. diameter and for bending bars or structural shapes with 2 in. as a maximum dimension.

These machines are operated by

throwing a friction clutch into engagement by means of a lever and can be operated either forward or reverse. Adjustable stops are provided to suit any degree of bend required. The clutch is automatically thrown out of engagement at both the end of the bending operation and when the machine has been reversed to the starting position. The fixtures for pipe bending provide for securing the pipes to the forms by means of a strap. Both the outside follower and the form are grooved with the proper clearance to secure the desired results. The outside follower bar operates between the tube and the roller, instead of the roller working directly on the tube. This method supports the tube for a greater distance and prevents flattening.

Special forms with inside follower bars or floating mandrels can be furnished for bending light-gage tubing to a short radius without danger of flattening or crimping. Heavier



At Left, Belt-Driven Pipe Bending Machine. At Right, Power-Driven Machine for Bending Larger Sizes of Pipes and Structural Shapes



gages of tubing than  $\frac{1}{8}$ -in. wall can be formed by using the outside follower bar only and dispensing with the mandrels for supporting the tubes on the inside during the process of bending.

The No. 15 Wallace bar-bending machine is used for bending cold metal bars of 1 in. diameter or 1 in. square, flat shapes  $\frac{3}{8}$  in. x 2 in. on edge or flatwise, and angles 2 in. x 2 in. x  $\frac{1}{4}$  in. The machine can also be used on hot bending work  $1\frac{1}{2}$  in. squares or round, also flat shapes  $\frac{3}{8}$  in. x 2 in., and angles  $2\frac{1}{2}$  in. x  $2\frac{1}{2}$  in. x  $\frac{1}{8}$  in.

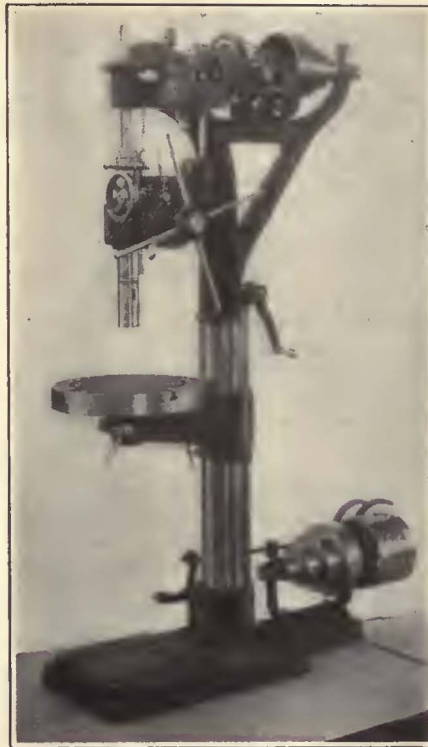
An adjustable stop mechanism is provided on the underside of the machine for automatically stopping and rotating the table at any predetermined point, so that materials can be bent exactly to any desired number of degrees. The speed of the rotating table is 6 r.p.m., the production varying according to the number of degrees that the material has to be bent, the length and kind of stock and also the size of the sections. A fair average production estimate for ordinary cold bending to 180 deg. is 150 pieces per hour, based on rounds, squares and flats bent flatwise.

The No. 8 Wallace machine is power driven and is of very sturdy construction. It was designed primarily for bending of reinforcement bars as large as  $1\frac{1}{4}$  in., but the machine has ample power to bend two of these bars at a time and in this way production is increased. The machine can also be used for bending angle iron and for bending pipes of all sizes up to 4 in. diameter. The No. 8 bender will produce from fifteen to twenty bends per hour.

### Improved Vertical Drilling Machine

THE accompanying illustration shows a 20-in. vertical drilling machine which has recently been redesigned and improved by the Superior Machine Tool Company, Kokomo, Ind. The improvements include bronze bushings, back gears, geared feeds, and wheel and pilot feeds. Particular attention has been given to a demand for a drilling machine for jobbing work.

The housings for the bearings are bored to standard dimensions, and the bushings which fit in these may be easily removed and replaced when worn. The spindle sleeve is made of cast iron, bronze bushed, and is graduated the full length of its



New 20-In. Vertical Drilling Machine

travel. The stop collar is arranged to allow for maximum travel without removal. The column is well proportioned and is reinforced at sections subject to heavy strain. A 2-in. belt and pulley and  $2\frac{3}{4}$ -in. belt on the counter pulley are used for driving. This gives all necessary power for drilling within the capacity of the machine. Ample provision for lubrication is afforded for all working bearings. As shown in the illustration, this machine is belt driven, but it can be adopted for motor drive, with motor speeds varying from 750 to 1,800 r.p.m.

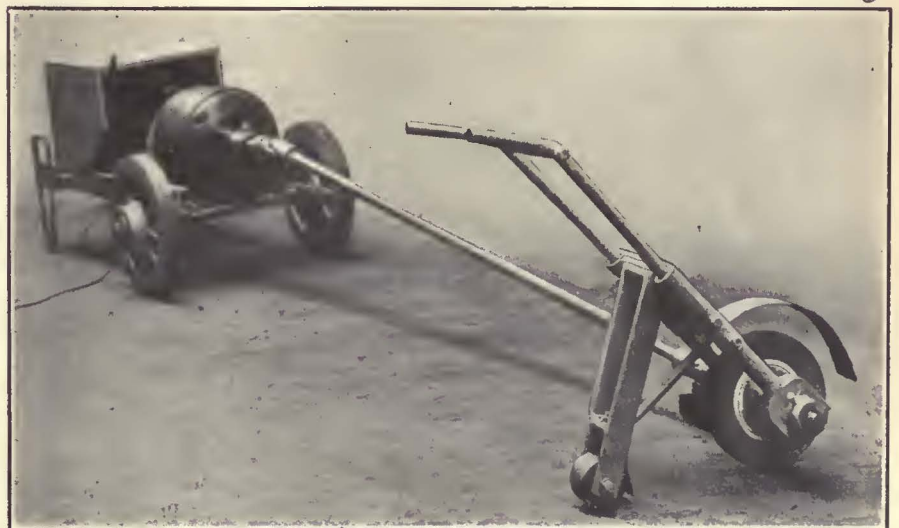
The table is reinforced by sectional ribbing and also has a large supporting shoulder on the hub, to

give additional stiffness when drilling at the edge of the table. The height of the machine to the top of the pulley is 74 in., the spindle being 41 in. from the base. The distance from the table to the spindle is  $25\frac{1}{2}$  in., the traverse of the spindle sleeve  $8\frac{1}{2}$  in., and the traverse of the table  $23\frac{1}{4}$  in. This machine drills on the center of a  $20\frac{1}{4}$ -in. circle. Six spindle feeds from 0.005 to 0.018 in. per revolution are available.

When belt driven, a driving pulley 9 in. x 3 in. running at a speed of 450 r.p.m. is used. This gives four direct spindle speeds from 971 to 875 r.p.m. and with the back gears in four additional speeds from 25 to 226 r.p.m. can be obtained. A 1-hp. motor is required if the machine is to be motor driven.

### Rigid Shaft Connection for Track Grinder

A MACHINE for emergency work and for grinding the grooves of special trackwork has recently been developed and is being marketed under the name of the Vulcan telescopic shaft grinder, by the Railway Trackwork Company of Philadelphia, Pa. The principal feature of this grinder is the shaft connection, which is a square steel tube connected to the motor and grinder shaft by universal joints. The manufacturers claim that there is less danger of trouble and less breakage of shafts from this type than with the flexible shaft equipment. By using universal joints at each end of the telescopic shaft sufficient flexibility is obtained for the usual operations of grinding encountered on tracks and in electric railway shops. The apparatus weighs approximately 400 lb.



Track Grinder with Shaft Which Telescopes



# The News of the Industry

## One-Man Car Trial

**Berkeley Will Use Equipment for Six Months—Oakland Fight Not Making Progress**

Through its Council the city of Berkeley, Cal., has voted to put one-man cars on trial for a period of six months. The significance of this move is better understood when it is explained that at present there is an ordinance in that city which forbids operation of cars of this type; that Oakland, an adjoining city, has banned the one-man car, and that Oakland's Mayor sent a letter to the Berkeley authorities urging them to join with him in the war he is making on the San Francisco-Oakland Terminal Railways.

City Manager Edy and City Attorney Sanderson of Berkeley have been directed to prepare an amendment to the prohibiting ordinance, providing for a six months probation of the safety cars. The operation of the one-man cars in Berkeley will be limited to Ashby Avenue and Dwight Way.

The Council has also decided to permit the railway to operate buses in Berkeley at an annual fee of \$60 a bus. All other applicants who sought similar permission have been excluded.

### CITY MANAGER APPROVES PLAN

The action of the Council was based on an exhaustive investigation conducted by City Manager Edy as a result of which he recommended that one-man cars receive a fair trial. He held:

1. Operation of one-man cars need not be objectionable from the standpoint of policing.
2. Use of one-man cars may be expected to delay traffic or to bring about traffic congestion only if such cars are used on heavily traveled lines.
3. Traffic delays incident to the use of safety cars can be materially reduced by adopting the San Diego system of collecting fares as passengers enter on inbound cars and as they leave outbound cars.
4. No extra hazards surround passengers riding in such cars.
5. Operation of one-man cars should bring about an immediate improvement in service on the lines where they are used and, as economies are introduced, the city is manifestly in a better position to request a review of the company's rates by the Railroad Commission.
6. The so-called "one-man, two-man cars" are superior to one-man cars. If permission to use the latter is granted and if such use proves satisfactory to the public, the former should be operated to the limit of their practicability in Berkeley.

Objection to the proposed amendment is voiced by the Housewives' League, which is threatening to call a referendum on the matter. This, however, has not as yet been definitely decided. Improvement clubs are generally expected to back the recommendation of the City Manager.

The controversy in Oakland over the use of the one-man car appears to have passed the acute stage, at least for the time being. Petitions are still being

circulated asking for a bond issue to settle the question of municipally operated buses, but the public seems indifferent. It is claimed that the necessary 6,000 signatures have been obtained, but on Dec. 11 the petitions were still in the hands of the circulators. Although the ordinance remains in effect that was passed against the use of the one-man cars in Oakland, cars of that type are still being run there.

In the meantime the city bus, the "Rosalie," continues to be operated by the city under the supervision of Commissioner Moorehead. An effort was made to purchase this bus, but the Council found a flaw in the ordinance, which specified that a "new" bus should be acquired. As the "Rosalie" was six weeks old at the time this ordinance was passed, a majority of the Council balked and the "Rosalie," although making official trips, is still only loaned to the city by the makers.

Mr. Moorehead recently announced that he had found funds among those of which he has control by which four new buses can be purchased. He has expressed the intention of asking the Council for permission to acquire these buses, but so far, he has failed to do this and the source of the funds which he proposed to use remains one of the deep mysteries of Oakland.

## Making Plans for Railway Continuance in Massachusetts

In view of the court decree which calls for cessation of service on the Connecticut Valley Street Railway system, operated by a receiver, by March 1, a movement is under way to form a citizens' company in Northampton to buy the lines running from that city to Amherst and Hatfield. The Northampton Street Railway officials, while stating that they had no intentions of taking over these lines on their own behalf, have indicated that they might be willing to operate them under some arrangement with the prospective owners. In respect to the Greenfield and Turners Falls line no interest has been exhibited in the matter of arrangements to continue the road in operation, the residents apparently being resigned to the prospect of bus operation.

On the Northern Massachusetts system, active interest is being taken in Athol, Gardner and Templeton, in the plan to command local capital to purchase and operate stretches of road serving these communities. These plans are ordered with a view to buying the physical properties at a sufficiently low price to start the project on a paying basis. Service on the section running between Winchendon and Baldwinville was discontinued on Dec. 15.

## New Contract Proposed

**Cincinnati Committee Contends that Relations of Railways with City Are Discordant**

Abrogation of the Cincinnati Traction Company's franchise and the awarding of the company with a new contract with no "entangling alliances," together with a fare not to exceed 7 cents and improved service for the car riders, are the outstanding recommendations in the report of Mayor George P. Carrel's traction committee, made public on Dec. 15. The report will be submitted to the City Council before Jan. 1 for ratification. The committee was appointed two years ago by Mayor Carrel to study Cincinnati's traction situation.

### SIMILAR PROPOSAL MADE BEFORE

The proposals are similar to those offered in April, 1921 by W. C. Culkins, formerly Director of Street Railroads. At that time Mr. Culkins recommended that the service-at-cost franchise under which the traction company operates be abrogated. The Mayor's committee further recommends that the traction company be compelled to pay the cost of repairing that portion of the street along the rails for a distance of 2 ft. outside and between the rails. The committee also suggests that the aggregate capitalization of the Cincinnati Traction Company, Cincinnati Street Railway and the Cincinnati & Hamilton lines be reduced from \$39,000,000 to \$25,000,000; that the earnings of the traction company be limited to 6 per cent on the \$25,000,000, and that the traction company be required to surrender its jurisdiction over all other activities in which it is involved and devote its entire energy to the operation of its electric railway system. Another provision suggested is that net earnings exceeding 6 per cent on the capital be applied to cut fares.

The Mayor's committee said it had reached the conclusion that the differences between the Cincinnati Street Railway and the Cincinnati Traction Company were irreconcilable. The report criticises the existing franchise, which it says is a partnership between a public body and a private enterprise, saying it has failed utterly of its heralded results at the time of its adoption. The Cincinnati Traction Company took over the local electric railway system from the Cincinnati Street Railway under a fifty-year lease in 1901.

It is pointed out that instead of fares being reduced or held at a specific rate they have advanced and the prospects are for indefinite advances. Along with this, the report says, there has been a steady decline in service.



The recommendations of the Mayor's committee were approved by the entire membership.

The committee found:

1. The mutual relations between the Cincinnati Traction Company and the Cincinnati Street Railway and the city of Cincinnati are discordant and lacking in necessary co-operation and harmony.
2. Maintenance of the traction properties has been deferred year by year until the accumulation of deferred maintenance will require from \$2,000,000 to \$4,000,000 to absorb.
3. The Cincinnati Traction Company has activities other than the transportation of people over the streets of the city.
4. The aggregate capitalization of the street railway properties in this city is excessive.
5. The service given to the public in the operation of the car lines is grossly inadequate and unsatisfactory.
6. The rate of fare, considering the service rendered, is unreasonable and excessive.

The committee recommended that:

1. The now existing contract of the city of Cincinnati, known as the service-at-cost franchise, be rescinded and abrogated.
2. A new franchise be offered, which shall provide among other things:
  - (a) A reduction in the aggregate capitalization of both the Cincinnati Traction Company and the Cincinnati Street Railway, including the Cincinnati & Hamilton lines, from approximately \$39,000,000 as now claimed, to a sum, which including stocks, bonds, debentures, car certificates and all other forms of indebtedness, and such sum as shall be necessary to rehabilitate the system, or to so improve it as to assure first-class service, shall not exceed \$25,000,000, and to which shrinkage and reduction both the companies should contribute.
  - (b) A provision limiting the rate of fare to a maximum of 7 cents based on present operating costs, with a further provision that net earnings exceeding 6 per cent on the capital investment, as above recommended, be reflected in diminution of fares.
  - (c) A cessation on the part of the operating companies of all activities save the operation of cars and the transportation of the passengers over the lines within the city limits and territory immediately contiguous thereto.
  - (d) A provision constituting a sum sufficient to take care of the cost of the repairing of that portion of the streets along the rails of the operating company to a distance of 2 ft. outside and between the rails, and that the same be a preferred charge against the earnings of the operating company.
  - (e) A provision to the effect that any order of the Director of Street Railroads, or other authorized city official, to the operating companies, shall be presumptively reasonable and to be complied with within the time specified in the order, unless declared by a court of competent jurisdiction to be unreasonable or confiscatory.
  - (f) The city officials in every department to take at once the necessary steps to compel a compliance with the above recommendations.

### Americans Organize Company to Develop Foreign Utilities

Announcement was made on Dec. 18 by the Electric Bond & Share Company, New York, N. Y., of the incorporation in Maine of the American & Foreign Power Company, Inc., which will enter the public utility field of Cuba, Central America and South America. The organization of the new company, which marks the first time that American hydro-electric enterprise has been extended on a large scale into foreign countries, was effected by the Electric Bond & Share Company, the common stock of which is owned by the General Electric Company.

The president of the new company will be S. Z. Mitchell, who is also president of the Electric Bond & Share Company, and the following will be directors: Owen D. Young, chairman of the

directors of the General Electric Company; Anson W. Burchard, president of the International General Electric Company; Clarence Dillon of Dillon, Read & Company, and Charles E. Mitchell, president of the National City Bank.

The ground work of the new company consists of a number of public utility companies acquired in the last few years by the Electric Bond & Share Company in thirty-nine communities in Cuba, Panama and Guatemala. Some of the more important are hydro-electric companies serving Santiago, Cienfuegos, Cardenas, Santa Clara and Camaguey in Cuba; the Panama Power & Light Corporation, which controls several important power units in Panama, and the chief power companies in Guatemala. Among these properties are included one or two electric railways. These will be developed so as fully to meet the needs of the territory they serve, but the plans of the new company do not now contemplate entering this field with new enterprises.

### Community Chest Helped by Railway Employees

When the drive of the Allied Charities of Kansas City, Mo., and the Community Chest of Kansas City, Kan., was conducted, from Nov. 5 to 10, none of the institutions of Kansas City responded more quickly or more generously than the employees of the Kansas City Railways. The men and the women who make up this organization were among the first to go over the top.

In former years outside committees have solicited the employees, but this was not satisfactory, so this year committees to handle the work were appointed in every division and at all departments on both the Missouri and Kansas sides and each committee in turn elected its own chairman or captain. Actual work was started by the committees on Nov. 1. The motto was: "A Day's Pay for a Year's Charity." The goal was 100 per cent subscribers from each member of the organization. Each evening the captain of each team telephoned his report to the secretary of the company, who tabulated the records and sent out daily bulletins showing the standing of the various divisions and departments.

Within six days the grand total of their efforts for the benefit of charity resulted in 3,290 employees subscribing \$13,822.40, an average of \$4.20, a record that no other organization in Kansas City bettered.

**Vacancy for Engineer.**—The United States Civil Service Commission announces an open competitive examination for assistant electrical engineer (power plant). This examination is to fill a vacancy in the Quartermaster Corps of the Army, Philippine Islands. Receipt of applications will close on Jan. 15.

### Wage Plan Subject of Association Meeting in Philadelphia

One of the outstanding events of the annual meeting of the Co-operative Welfare Association of the Philadelphia Rapid Transit Company was the suggestion made by Dr. Arthur A. Mitten, secretary of the association, that a new wage plan should be put into effect based on the purchasing power of the dollar. Dr. Mitten's plan was announced following a recommendation by Ralph R. Nyman, retiring head of the association, that some new method for adjusting wages was needed to replace the so-called "three-city plan," which, he said, was made effective as a war-time measure and had outlived its usefulness.

Mr. Nyman said that since men and management are in Philadelphia together accomplishing more than was being done elsewhere it was not just that their wages should be governed by conditions in other cities. He said that 99 per cent of the men had agreed to accept a 65-cent rate, refunding the 2½ cents to the co-operative wage dividend fund, the present wage being 67½ cents. At the end of the year each worker is credited with 10 per cent of his year's wages in this dividend account, which brings the effective rate from 65 cents to 71½ cents an hour. Mr. Nyman announced that \$3,300,000 in stock was held by the workers in the wage dividend fund. In addition, the Welfare Association owns 10,000 shares and the association itself, which administers sick benefits, has a membership of 99.96 per cent of eligible members. Mr. Nyman further said that the helping hand fund had distributed \$30,000 to needy employees and that the savings fund had passed the \$2,000,000 mark.

Dr. Mitten referred to the "three-city average" and said that during the war, when agitators sought to arouse trouble by contending that the wages were lower than the union scale, the company was in a defenseless position, because of the existing man shortage, and in order to avert the attempted strike planned to secure government intervention. It adopted the War Labor Board's wage rate decision for certain so-called first-class unionized cities and made this the basis for adjustment of employees' wages in all departments of the company.

He referred then to the determination of the company that beginning Jan. 1 of next year the basic wage rate would be 65 cents. He said that this wage assured the continuation of the present standard of living, which was better than heretofore experienced. He said in this connection:

"We should, therefore, in these prosperous days so plan that we be not overtaken by adversity when business depression makes decreased wages necessary."

The new wage scale, which is effective Jan. 1, 1924, was referred to in the ELECTRIC RAILWAY JOURNAL, issue of Dec. 15.



### Virginia Property Relieved of Paving Between Tracks in Portsmouth

The State Corporation Commission has relieved the Virginia Railway & Power Company of the duty of paving between its tracks in Portsmouth. A counter action was overruled which had been brought by the city of Portsmouth, holding that the commission had no right to disturb a contract between the city and the company.

The case, the first of its kind in Virginia, arose not long ago when the city of Portsmouth decided to pave its principal street, a wide thoroughfare, and served notice on the railway that it would be expected to pave between its tracks and 2 ft. on each side of them, according to the contract with the City Council. The railway took appeal to the Corporation Commission, on the grounds that the property was not a paying investment and that the company could not be forced to expend funds for this work when the property was being operated at a loss.

Jurisdiction was the principal question before the commission, and that body decided that no city could enter into a contract prejudicial to the welfare of all. The principle of the decision is that the Commonwealth is greater than any of its political subdivisions. The commission held that there was no valid contract obligation on the company with respect to the alleged duty of paving and that even if there were such a contract the state had the power, with the consent of the company and over the protest of the city, to suspend such duty. It therefore overruled the demurrer of the city of Portsmouth.

Pointing to the fact that the company's losses from operation last year were about \$100,000 and that the paving bill would be in the neighborhood of \$175,000 (estimated), the commission decided that to impose this heavy burden upon the power company "under present conditions would be unjust and unfortunate; unjust to the power company and unfortunate to the public whose needs the company is designed to serve."

The commission states that the decision is on the merit of the proposal, and does not mean that similar action will be taken in other cases.

**Ruling Rendered on Service Extensions.**—Asserting that the Wisconsin Railroad Commission is without authority to order extensions of public utility services in municipalities, the Wisconsin Supreme Court affirmed the decision handed down recently by a lower court at Madison in the case of the state vs. the Washburn Water Works Company involving municipal or commission jurisdiction over municipal water main extensions. The Wisconsin Supreme Court in its latest decision held that authority to demand extensions and impose penalties for failure to comply with orders

of the commission is vested in the municipality and not the commission. This ruling is regarded as likely to have an important bearing on railway extensions requested by municipalities.

### M. O. Agitation Renewed

Messrs. Witt and Hatton Want to Take Over Cleveland Railway—Consummation of Plan Unlikely

Talk of municipal ownership of the railway system is again going the rounds in Cleveland.

Under the service-at-cost franchise with the Cleveland Railway the city has the option to purchase the property at any time by the payment of \$110 a share for the stock. This stock is now selling in the market for about \$95 a share. Inasmuch as there is approximately \$30,000,000 par value of stock outstanding, with an additional \$5,000,000 par value of bonds, it would require a bond issue of about \$38,000,000 for the people of Cleveland to purchase the property.

The talk of municipal ownership was started recently because of the fact that Cleveland on Jan. 1 begins the city manager form of government, and Peter Witt and Prof. A. R. Hatton, two of the newly elected members of the City Council, are both avowedly in favor of municipal ownership of the Cleveland car system.

Following declarations by Prof. Hatton and Mr. Witt that they favored purchase of the railway lines, John J. Stanley, president of the Cleveland Railway, said he was agreeable to the city purchasing the lines at any time if the stockholders were paid \$110 a share as called for by the option in the franchise.

On Dec. 17 Councilman John Sulzmann introduced a resolution calling for a bond issue sufficiently large to purchase the Cleveland system. This resolution was defeated in the City Council, but on a move to reconsider it is now in the hands of the street railway committee of the Council, where it will die with the present Council this year. Councilman Sulzmann's action was evidently taken merely to beat an expected move on the part of Councilman-elect Hatton after the first of the year.

During the life of the service-at-cost franchise in Cleveland, there have been two efforts in City Council to have the city purchase the lines. Both were defeated as was a proposition put up to the people of the city by the socialist party.

Most political leaders are of the opinion that any effort to bond the city for \$38,000,000 to \$40,000,000 for the purchase of the lines by the city would meet with defeat. It is the general belief in Cleveland that the service-at-cost franchise, with the City Council dictating the kind of service to be given, affords the people of Cleveland practically all the advantages of municipal ownership with none of the drawbacks inherent in such ownership.

### Officials of Brooklyn Company Agree to Modification of Transit Plan

Gerhard M. Dahl, chairman of the executive committee of the Brooklyn-Manhattan Transit Corporation, has consented to accept a subway extension instead of an elevated structure as a means of ending the deadlock which has prevented the extension of the Fourteenth Street-Eastern subway from Meserole Street, Brooklyn.

The dual subway contracts called for an elevated structure for that part of the line, and the refusal of Lindley M. Garrison, formerly receiver of the old Brooklyn Rapid Transit Company, to permit the substitution of a subway brought about the deadlock, the Board of Estimate refusing to build an elevated line.

Mr. Dahl said that the directors of the company on the report of a special committee, composed of Robert Albert Shaw, Arthur S. Somers, Travis H. Whitney, William S. Menden, president of the company, and himself had agreed that the three projects should be considered as a unit under this program:

1. Dual subway contract No. 4, signed March 19, 1913, is still binding between the city of New York and the company. Under this contract the city agreed to construct the Fourteenth Street-Eastern line. This has not been completed. We are ready, however, to operate this line whenever the city finishes the work. We have been asked whether we will consent to a change in our contract so that the eastern portion may be constructed as a subway. As the public demand for this change evidently expresses the public need, we will agree to this change in the contract provided our present legal rights and claims are adequately preserved and the subway is constructed under plans which will connect it with our existing structures at East New York, but we wish to point out to the public that this company expended years ago, in anticipation of the early completion of this line, approximately \$500,000 third-tracking the Myrtle Avenue elevated, which includes an express station at Wyckoff Avenue to connect with the Fourteenth Street-Eastern line. This expenditure will be wasted unless facilities are provided for the convenient transfer of passengers between the Fourteenth Street line and the Myrtle Avenue line at this point.

2. The second plank in our program of action is the construction of the Nassau-Broad Street line. This is also an unfulfilled part of Contract No. 4. The B.-M. T. is ready to equip and operate this line as soon as the city constructs it. Furthermore, as a part of this contract the city agreed to build shops and yards. These are urgently needed in order to maintain even the present service. When the Nassau-Broad Street line is built and the Fourteenth Street-Eastern line is completed, the present 50,000 daily victims of the Canal Street blockade will receive the direct relief which they demand and need.

3. The third plank relates to the proposed connection between the Fulton Street "L" and the Fourth Avenue system at Ashland Place. The B.-M. T. is entirely willing to sign a contract for the Ashland Place connection as soon as it has definite and tangible assurance that the city will construct and complete the Fourteenth Street-Eastern and the Nassau Street lines.

**Increased Pay for Inspectors.**—The compensation for first grade inspectors (road inspectors) in the employ of the Municipal Railway of San Francisco has been increased from \$165 to \$185 a month, effective Nov. 16. At the same time the salary of day dispatchers was increased from \$175 to \$195 a month and of night dispatchers from \$165 to \$185 a month.



### Babtiste and Beard Honored

C. A. Babtiste and W. K. Beard, advertising managers of the *ELECTRIC RAILWAY JOURNAL* in New York and Philadelphia territories, respectively, were the guests of honor at a dinner on Dec. 17 at the University Club, New York. The occasion was to celebrate more than a quarter of a century of service by them with the McGraw-Hill Company. The theme of the dinner was dependability. James H. McGraw was toastmaster and more than 100 guests, mostly members of the McGraw-Hill organization, gathered to pay tribute.

After introducing the guests of honor and reviewing briefly the history of their association with the company, Mr. McGraw presented each of them with a check for \$1,000, accompanied by a letter expressing his appreciation of their loyal, intelligent and dependable service.

Summoned from Philadelphia at almost the last minute, Mr. Beard was so completely taken by surprise that he said he found it difficult to express adequately his appreciation of the event.

Mr. Babtiste spoke brilliantly about the meaning of the publishing business to him and about the work of the company as an avocation for young men. He said that a publishing house to be successful as the McGraw-Hill Company has been could go forward only on the basis of "Service, more service and still more service."

During the evening L. W. Seeligberg, formerly business manager of the *ELECTRIC RAILWAY JOURNAL* and now in business for himself, was presented with a gold watch as a token of appreciation from his former associates.

The dinner happened to be on Mr. McGraw's birthday and the occasion was seized upon by his associates to surprise him with the gift of a handsome watch and chain.

### Indiana City Seeks to Buy Three-Mile Railway

The city of Washington, Ind., has petitioned the Public Service Commission for authority to buy the Washington Street Railway, consisting of 2.6 miles of track, six cars and two trailers and other property. The city, the petition said, has a comparatively new \$140,000 electric power plant, which is equipped to provide current for the cars. The property of the company is assessed for taxation at \$36,840, it was said.

### Moving Pictures to Win Public Co-operation

The Boston Elevated Railway has adopted a new plan to secure the good will of the public. It will bring all its troubles to the attention of the public. It has just established an information booth in the Park Street station, one of the most congested points on the system, to keep the passengers informed on car movements and delays

and suspensions and diversion of traffic routes.

In addition to this the company has adopted a movie film which shows actual incidents and conditions on the system that make for slower or interrupted service, and these pictures are to be shown in the theaters all over the district. The reel was shown in several houses in Boston this week. The picture presents the arrival of an irate passenger at one of the stations, greatly provoked by the fact that there is no car on hand to rush him into his office, for which he already is late. The starter is taken to task severely for such rotten service, and as the scene shifts from place to place the passenger learns about the open drawbridge, the breaking down of a motor truck, the traffic blockade at one point and a big fire at another and he learns about various other situations over which the company has no control, but which affect the service. At the end of the reel the irate passenger has become satisfied and congratulates the starter on doing so well with such handicaps. The public is expected to become more tolerant and give better co-operation after it has seen these pictures.



**Company and Every One Else Celebrating.**—Considerable interest is being shown in street railway circles in the celebration of its anniversary month by the Northeast Oklahoma Railroad at Miami. The company operates interurban service between Miami, Okla., and Columbus, Kan. The company is carrying a series of advertisements in the newspapers giving information as to payrolls, passengers carried, cars moved, freight handled, and asking for public support and patronage. All employees are soliciting business and suggesting routing of freight over the line that issues their pay checks. Posters in store windows proclaim the desire of the company to serve. A company orchestra is giving concerts and a general "open house" is being conducted by all departments of the company.

**Extension Matter Given Hearing.**—Hearing in the matter of the petition of the Mayor of Amsterdam, N. Y., for an order of the Public Service Commission to direct the Fonda, Johnstown & Gloversville Railroad to extend its lines into the Fifth Ward of the city, under the terms of a franchise granted in 1910, was further continued without opposition until Jan. 14 at Albany to enable the company to put in some additional testimony. Witnesses gave evidence concerning the cost of building and operating the proposed extension and the demand for trolley service in the Fifth Ward. Estimates were also given as to the revenues which would be received by the proposed extension

as well as the operating cost, the witnesses contending that such construction and operation would result in a loss to the company in its other operations in Amsterdam. City Attorney Fitz James contended that the company should live up to its franchise.

### More Men to Receive Christmas Bonus.

—Payment of the 1923 Christmas bonus will be made to 1,916 trainmen of the Los Angeles Railway. The exact amount of money that will be paid has not been computed, but there are eighty-six more men to receive bonus this year than last year, the total last year being 1,830 trainmen. Special awards to be made to the ten top safety car operators and the ten top motormen and conductors of each division will range from \$10 to \$100. These awards are made in addition to the regular bonus, which is \$60, on a basis of \$5 per month.

**Newspaper Praises Railway.**—Once again the members of the Common Council of Binghamton, N. Y., will consider the advisability of granting the Binghamton Railway the right to charge a 6-cent fare within the limits of the city. Editorial comments in the *Morning Sun* of Binghamton under date of Dec. 5 would favor the 6-cent rate in view of the fact that the company kept faith with its promises made at the time the 6-cent fare was first proposed, namely, that new and better cars would be added and the company's service improved. The writer does not hesitate to add that residents in the city of Binghamton can find consolation in their 6-cent fare when compared with a 7-cent and 8-cent charge in various other cities.

**Accident on Indiana Interurban.**—Several persons were reported injured in a double rear-end collision of interurban cars on the Louisville, Ky., and Jeffersonville, Ind., connecting bridge during a fog on the morning of Dec. 17. It was reported that the first car, from Charlestown, Ind., had slowed down, when it was rammed by a regular car from Jeffersonville. The Seymour, Ind., car, also southbound, in turn rammed the car from Jeffersonville. The front and rear platforms of the center car were wrecked, but the other two cars were able to proceed on their own power. None of the three cars was derailed. The three cars are all under the operation of the Interstate Public Service Company.

**Safety Measures Devised.**—To supplement the crossing protection already maintained at the scene of the recent Twentieth Century Limited wreck at Forsythe, N. Y., the Public Service Commission on Dec. 14th ordered the New York Central and the Nickel Plate Railroads to give twenty-four-hour flagman service, and the Buffalo & Lake Erie Traction Company, operating a trolley line over the highway at this point, to bring all cars to a dead stop and then have the flagman cross the highway again to see there is no danger of an accident to highway users.



## Foreign News

### London Tube Collapses

A strange mishap occurred Nov. 27 in one of the tunnels of the City & South London Railway near the Elephant and Castle station. Just after a train had passed the ground above subsided and blocked the tube.

For some time work has been in progress of enlarging the railway tunnel, which hitherto had been smaller in diameter than those of the other tube railways. It is planned to make all of the tubes uniform in size, so as to permit through-routing and allow the interchange of equipment.

In the main the tubes that are now in regular operation by the companies in the city of London are driven through hard clay. It was necessary to remove the cast iron lining of the tunnel, excavate the necessary amount of material and place a new lining of increased diameter in the tunnel. The cause of the subsidence was the disturbance of the ground during the progress of this work in the vicinity of a large underground cavity. The whole of the railway has now been closed against traffic and will probably remain out of service for some time. Meanwhile, an augmented service of buses has been out on the route.

### Subway Project Approved

The Municipal Council has approved the subway project in Argentina. The work of building the new lines that are now proposed will be undertaken by the concessionaire in the near future.

### English Electrification Deferred

The plan of electrifying the main line of the Southern Railway's London, Brighton & South Coast division from London to Brighton has been indefinitely postponed, according to Sir Herbert Walker, chairman of the company. He stated that the heavy commitments in

the London suburbs, where traffic congestion is more serious, must be taken care of first. The plan for electrifying the main line would cost £10,000,000 and the directors of the company were not satisfied that it would prove a financial success.

## Extent of Damage to Japanese Electric Railways by the Earthquake

Street Railway System of Tokio Lost 837 Cars and 50 Miles of Track—Much Other Damage Done in the City and Surrounding Territory Is Described

BY SHIRO SANŌ  
Electrical Engineer, Tokio

THE sudden visit of the great earthquake on Sept. 1 left great damage to Tokio in various phases of metropolitan life, although the havoc wrought by the earthquake itself was not great compared with that due to the subsequent fire. The loss of life and property Tokio received at this time is the greatest ever experienced there, although the city has previously been visited by great earthquakes, on an average once in every century.

The street railway system of Tokio suffered a loss of nine substations, five car sheds, the main office and five branch offices, and 837 cars. About 100 miles of trolley and distributing lines and 50 miles of track were either burned down or disfigured by the quake. The total loss is estimated at about \$20,000,000. The damaged substations include two of 3,000 kw. each, one of 2,250 kw. and one of 2,000 kw. Fortunately, about 300 cars were saved and six substations were left intact, their outputs totalling 10,640 kw.

All the machines used on the system are either rotary converters or motor generators, except two sets of mercury rectifiers with a capacity of 550 volts, 900 amp. each, in the course of erection, which were burned.

### Charge for Luggage on London Tube Railways

On account of the delay at stops, the London Underground Railways has begun charging for the conveyance of luggage or bulky packages. Where the ordinary single passenger fare is 5d. or under, the charge will be equal to the single fare, and where the ordinary single passenger fare is over 5d. the charge will be 6d. Passengers' personal luggage up to 14 lb. weight will be carried free.

The city has no generating station of its own, but purchases all of the energy, mainly from the Kinugawa Hydro-Electric Company. The damage to this company was slight and it was ready to supply electricity Sept. 4.

The operation of the street railway of Tokio was resumed Sept. 6 with a limited number of cars on a few routes only, but operations were gradually widened as the reconstruction proceeded. By Oct. 1 the track in use had increased to 89.5 miles, the number of cars running to 400, the number of passengers carried to 863,000, with total carfare of 38,771 yen (\$20,000). The greatest trouble in the way of reconstruction is the shortage of cars, although every step is being taken to build new cars and to repair those partly destroyed. Cars from other cities could not be used, owing to the 4-ft. 6-in. track gage of Tokio, which is a relic of the old-time horse cars. To provide for immediate service the city authorities decided to order 1,000 Ford automobiles to be used in conjunction with the electric cars.

Free service was offered from Sept. 6 to Sept. 17 to all passengers, but later this gratuity was limited to holders of "certificate of sufferer." From Sept. 26



Street Car Burned in Front of the Famous "Shiroki-ya" Department Store. At Right, Destruction on Ainz-dori Street





No. 1. Many Cars Were Completely Burned in the Fire Following the Tokio Earthquake



No. 2. A Number of Bridges Collapsed Completely. The Men in the Foreground Are Military Engineers

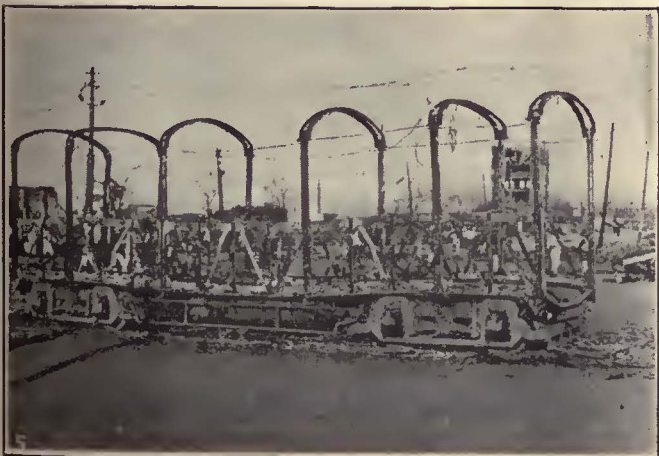
on free rides were discontinued and new rates of fare put in effect. Before the quake a charge of 8 sen was made for a single ticket, and 15 sen for a return ticket, with free transfers. The fare has since been changed to 6 sen for single and 10 sen for return tickets, without transfer. This really is a kind of fare-raising in the guise of low rates. It is, however, to be abandoned as soon as the system recovers to normal. The reason advanced by the city officials for the change is the lack of facilities for printing transfers.

The street railway system of Yokohama was almost entirely burnt up and it was only on Oct. 2 that it began operation on a few routes with freight cars as passenger cars.

**SUBURBAN RAILWAYS**

The damage done to the suburban railways is comparatively small and most of the systems began their operation soon after the catastrophe. The Keihin Electric Railway received damages to two car sheds and its generating station, and lost four bridges. It began partial operation on Sept. 11, and on Sept. 17 resumed service on its entire system. The income increased greatly owing to the suspension of the parallel line between Tokio and Yokohama of the Imperial Government Railways, whose generating station was destroyed.

No. 5 All that Was Left of a Tokio Low-Floor Car



No. 3. The Line of the Keihin Electric Railway Was Destroyed by the Earthquake

The Tamagawa Electric Railway received no damage from the quake, but the purchased power supply of 3,000 kw. was stopped for a while. It was unable to operate until Sept. 8. The

No. 4. The Yuraku Street Substation Was Completely Guttled by Fire. This Is One of the Tokio Stations Lost



Keisei Electric Railway received only slight damage and began operation soon after the earthquake. It offered free service until Sept. 8. The Keio Electric Railway, the Oji, the Meguro Kamata, the Ikegami, the Chichibu and the Musashi railways received but slight damage and resumed operation within a short time.

The general tendency of the suburban railways is toward an increase of passengers since the quake. The reason attributed is the exodus of city dwellers to the suburbs, as their homes were destroyed by fire, and they were obliged to find accommodations outside.

A bureau of reconstruction was formed after the calamity and is busy in planning the new Tokio. According to the proposed plan the city will have a number of subways under the main streets. This is expected to facilitate greatly transportation in the future.

[From other sources it is learned that the total loss suffered by the electrical industry in Japan will exceed \$100,000,000, and it will require three to five years to restore pre-earthquake conditions. A portion of the photographs reproduced herewith are furnished through the courtesy of S. Hirota, chief editor of the *Ohm*, Kobe, Japan, and S. Yamazaki, chief engineer, Investigation Department, Tokio Electric Light Company.—Eds.]

No. 6. Remains of the Ueno Electric Railway Station





## Financial and Corporate

### Valuation Appeal Argued

City Presents Its Case to Superior Court Seeking Relief from Commission Valuation Ruling

Argument was begun on Dec. 13 before the Superior Court of Pennsylvania on the appeal by the city for relief from the order of the Board of Public Utility Commissioners of the state upholding the 7-cent fare on the lines of the Philadelphia Rapid Transit Company upon a valuation of the company's which the commission fixed at substantially upward of \$200,000,000. The questions which the city says are involved in the appeal are:

1. Is the order of the commission reasonable and in conformity with law?
2. Is a valuation based on present reproduction cost correct?
3. Is the 1907 franchise contract between the railway and the city binding as to rates?

The city desires the Superior Court to remand the case to the commission with directions to reconsider the matter and decide it in conformity with law.

#### CONTENDS COMMISSION ORDER UNREASONABLE

The contention of the city is that the commission's order is vague and evasive and therefore not reasonable. The city holds that on its face the commission's order does not show enough facts to enable a reviewing court to check its correctness. In analyzing the difference between city and company figures on present reproduction cost the city says that the commission's order takes up only four items covering \$49,000,000, out of a total difference of \$103,000,000. The city contends, in short, that:

The commission makes a substantial allowance for going concern value and for economies in operation without stating the amounts. It fails to state a definite valuation. It is a determined effort to uphold the rate of fare created and instituted by the commission itself, without adequate reasons, published too hastily within ten days of the argument of a case of such magnitude, showing the 10,000 pages of testimony were not carefully weighed.

3. The valuation is based exclusively on present reproduction cost, which is not in conformity with law. The commission rejects all the city's figures on original cost and investment without consideration, and after comparing insufficiently the city and company figures on present reproduction cost new, concludes that as it would cost substantially upward of \$200,000,000 to reproduce the property today, that is its present value. This is contrary to the decision of the Supreme Court of the United States in the Atlanta Gas case, decided last June, which followed the Galveston Electric case of 1921. These cases decide that present costs must be given weight, but it is wrong to adopt them as the sole measure of value.

There are other errors of law in the opinion. The commission allows \$14,000,000, the cost of paving done by the company, calling it price paid for the franchise, when in fact the company itself carries its annual paving payment, of \$500,000 under the 1907 contract, as part of its operating expenses, and the commission has approved this practice. The commission allows \$13,000,000 for loss of fair return during early years of operation, when in fact the history of the property shows it was profitable from the start, earning an aver-

age of 12 per cent from 1861 to 1890. It allows \$17,000,000 for cost of financing, an item the Supreme Court of the United States decided inadmissible in the Galveston case. It rejects the city's investment figure of \$131,000,000 on incorrect grounds, as shown from the testimony.

The order is unconstitutional, as it impairs the obligation of the contract of 1907. That contract is binding. It was specifically authorized by the act of Assembly of April 15, 1907, which, under the decision of the United States Supreme Court in the Home Telephone & Telegraph case in 1908, gives it binding force. Even if the commission has power to alter rates fixed in ordinary franchise ordinances under the police power, that power does not extend to a contract like this, under which the city gave up valuable considerations in exchange for the rate promises made by the company.

During the presentation of the city's side by Samuel Rosenbaum, assistant city solicitor, Judge Keller interposed the remark:

"They (the commission) evidently did not deem material the question of the actual value of the company's property as 'upward of \$200,000,000' was sufficient to justify the establishment of the 7-cent fare as a proper return to the company.

There was no need for the commission in the circumstances to determine definitely exact values. How much more than \$200,000,000 the valuation should be would make no difference, as that valuation was sufficient to justify the present fare.

The case was concluded on Dec. 14 with the presentation of the argument of Frederick L. Ballard, counsel for the company. The court reserved decision.

Mr. Ballard said that the fare paid in Philadelphia is justified by the high quality of the service rendered, irrespective of what is the fair value of the property of the railway. Mr. Ballard declared that the fare of 7 cents cash or four tickets for a quarter had enabled the company to operate the Frankford "L," build two crosstown lines, operate the trackless trolley over Oregon Avenue and buy 520 large passenger cars.

"This state," Mr. Ballard added, "still is willing to reward those servants that provide good service." He referred to a section of the public service company law according "to any public service company financial recognition of efficiencies, economies and improvements effected by it."

#### EFFICIENT SERVICE CONCEDED BY CITY

These factors of efficient service had been conceded by the city and properly considered by the Public Service Commission, Mr. Ballard pointed out, but the commission went further. That body, in determining that the present fair value of the company's property was substantially upward of \$200,000,000, gave due regard, he said, to the many other factors of rate fixing.

The attorney explained that figures submitted to the commission showed that the company's service was "quicker, more frequent and more direct" than in a majority of the leading American cities and that the fare in Philadelphia was 6.6 cents compared with 7.9 cents in those cities.

In June, 1920, the Philadelphia Rapid Transit Company, feeling the need of more revenue because of war prices of labor and supplies, sought to abolish free transfers and exchanges in the delivery district, but the commission ordered a valuation to serve as a basis for a permanent rate of fare. In October, 1920, the company again asked for an increase, this time to a straight 5-cent fare, without transfers or exchanges. The commission refused this and instead ordered a temporary fare of 7 cents cash, with four tickets for 25 cents for six months until the valuation was completed. In May, 1921, this was continued. The valuation hearings did not end until May 15, 1923. The case was argued before the commission on June 11, 1923, and within ten days the commission published its order. The city promptly appealed.

In its original order the commission held in brief as follows:

1. A definite valuation is not essential except to protect the company from confiscation or to protect the public from unreasonable profits

2. The city's various investment and cost figures are not reliable enough to be controlling and, in any event, the decisions forbid the commission so regarding them.

3. On the contrary, the decisions require the commission to give substantial weight to present reproduction costs. On this basis, the value of the property is substantially upward of \$200,000,000. The city admits \$187,000,000 undepreciated and the commission decides enough disputed items to bring that over \$200,000,000. The commission is not certain anything should be deducted for depreciation, but if so, it is at least offset by going concern value, both of which are intangibles.

4. The present rate of fare is reasonable when compared to that in other cities and to the present value of pre-war dollars; under it the company is giving good service and improving it, and enjoying a generous return after paying liberal operating expenses, so it is not confiscatory. But with a property valuation of at least \$200,000,000, this return is not excessive, so we dismiss the complaint.

### Loans Needed for Seattle Municipal Payments

With a cash deficit of about \$780,000, not to be confused with the book deficit of \$1,144,803, the Seattle Municipal Railway will need more loans to meet the \$833,000 redemption payment and \$333,350 interest due March 1 on the \$15,000,000 purchase bonds, according to an announcement of city officials. The financing contemplated between now and Feb. 1, when the redemption and interest money must be set aside, will involve loans of between \$350,000 and \$400,000, treasury officials state.

About one-half of the cash deficit was piled up during the three and one-half months last spring when the railway was on a 5-cent fare between March 1 and June 16. With the return to the 8½-cent fare, the railway is making a small net profit, its monthly reports have shown, and the book deficit for the ten months of 1923 for which financial statements have been completed totals \$167,312, showing a considerable recouping of the 5-cent fare losses. City officials are hopeful that the cash deficit will be wiped out by the end of 1924 or early in 1925. Details of the necessary new loans have not been worked out.



## Abandonment Authorized

### Ohio Body Rules Service May Stop from Youngstown to Girard, Niles and Warren—Cities Seek Postponement

The West End Traction Company, a subsidiary of the Pennsylvania-Ohio Electric Company, controlled in turn by the Republic Railway & Light Company, with the consent of the Ohio Utilities Commission, will terminate its service from Youngstown to Girard, Niles and Warren on Jan. 1. Service will also be discontinued from Niles to Mineral Ridge, from Warren to Leavittsburg and on the city lines in Warren. The population in these com-

to authorize the abandonment of public utility facilities.

The company contended that for the past four years the operation of its system has been carried on at an actual out-of-pocket loss. Moreover, during this period, the officials of the company pointed out, maintenance has been deferred to almost the danger line. On its part, the commission said that the evidence was to the effect that during this period of time the company operating this division had adopted every feasible and practical method of encompassing economies.

The evidence as to the revenues is summarized in the following table:

	Year 1920	Year 1921	Year 1922	Nine Months 1923
Total revenues.....	\$575,919	\$478,129	\$477,729	\$356,634
Operating expenses.....	621,763	544,731	485,324	374,372
Operating deficit.....	\$ 45,844	\$ 66,602	\$ 7,595	\$ 17,737
General taxes.....	63,000	63,000	63,854	29,658
Total deficit.....	\$108,844	\$129,602	\$71,449	\$47,396

munities aggregates 50,000. In all, about 20 miles of trackage is involved. The order of the commission was entered Dec. 14.

The cities of Warren, Niles and Girard, in Trumbull County, have since petitioned the commission to delay until Feb. 1 from Jan. 1 the abandonment of service. The company has consented to the modification of the commissions order with the understanding that increases in fare will be granted to permit operation to continue.

The West End Traction Company filed its application with the commission on Oct. 6. It sought authority permanently to abandon all of its property, comprising an electric railway extending from the westerly limits of the city of Youngstown, to the city of Girard, a distance of approximately 1 mile; thence to the city of Niles, a distance of 5 miles; thence to the city of Warren, a distance of 5 miles, and thence to the village of Leavittsburg, a distance of 4 miles, together with a line running from Niles to Mineral Ridge, a distance of about 3 miles. In addition to these direct lines the company also operates two short loops in the city of Warren.

At the hearing on the matter on Nov. 16 demurrers were filed by the cities of Niles, Warren and Girard and by the Commissioners of Trumbull County, denying the jurisdiction of the commission to hear and determine the application. In arguing these demurrers, counsel cited the franchise contracts between the applicant company and these political subdivisions which reserve the subject of fare revision for adjustment by the parties. It was further alleged that these contracts stripped the commission of jurisdiction in any differences which might arise between the parties.

The commission held that the demurrers were not well taken. The opinion of the commission was that the statutes confer upon it exclusively, jurisdiction

In its finding the commission pointed out that these figures show there is nothing set aside for the deferred maintenance or depreciation accounts and no balance available for a return on the property.

The commission also pointed out that the line traverses a territory which has had a steady and continuous growth in the last ten years, but that the revenue and traffic of the company during this period, especially in the last four years, has steadily decreased. It ascribes the condition confronting the company as doubtless due to the general use of the privately-owned automobiles.

Counsel for the municipalities developed the fact that the revenues as reported did not include the receipts from a coach line which parallels the railway. This property, the commission found, was held in the name of a separate company. As respects this bus operation, the witnesses asserted that it was experimental and that no definite conclusions were yet possible. The commission pointed out that the service operated along this route is not comparable to the applicant's service, and that rates are collected practically double these charged by the traction company.

The main contention of the municipalities, aside from that of lack of jurisdiction on the part of the commission, was that the applicant company should negotiate such adjustments in its fares as would enable the retention of the service. The opinion of the commission on this point was that the following question and answer from the record sum up this situation:

Q. Is it possible, Mr. MacCalla (the vice-president and general manager of the applicant company), under any rate of fare that would be practicable, for that company to make a fair return or a substantial return upon the amount invested in the tracks and property?

A. I believe such a rate as would theoretically do that would have the effect of decreasing the traffic and actually defeating the object aimed at. In other words, I do not believe it is possible to put a rate in

there which would give a reasonable return on the capital after taking care of operating expenses and necessary reserves for replacements.

There was some question in the record as to the good faith of the owners of this property in segregating it. On this point the commission said that the city of Youngstown some time since contracted with the operators of the properties for the segregation of the so-called Youngstown Municipal Railway and that the normal procedure for the owners was to segregate the property involved in the present proceeding under a distinct ownership. In concluding its opinion in the case the commission said:

Having regard for the fact that a common carrier of persons should be financially responsible for the transportation of the people who entrust themselves to it, we must conclude that the welfare of the public will best be served by the abandonment of this line, which is consuming its own capital to maintain its service.

## Only 8 per Cent Dividend in New Orleans Authorized

R. S. Hecht, president of the Public Service, Inc., New Orleans, La., has taken occasion to reply to statements made from other than company sources as to the probable course the company will take in the matter of declaring dividends upon its present common stock and the probable issuance of the additional stock, etc.

Mr. Hecht says that at no time has his company considered paying a dividend of more than 8 per cent on the present common stock. Further, the agreement between the company and the city does not authorize a dividend of more than 8 per cent. In fact, money in excess of the amount needed for dividends must be put back into the company. Mr. Hecht said that this process must continue for a period of five years.

With respect to the company's needing more money, Mr. Hecht said it would probably have to have new money each year for several years.

At the meeting of the board of directors in January the budget and program for 1924 will be decided. At the same time the method will be determined by which additional financing can be carried out.

He said the company was spending the new money as advantageously as possible, and that all of the expenditures were calculated to increase efficiency and reduce the cost of operations, which of course would work toward a reduction in fares.

Commissioner Maloney says that the matter of refinancing the New Orleans Public Service, Inc., is not now before the Commission Council. He indicated that the question now up for settlement between the company and the city is the one of the additions that should properly be permitted to be made by the company to the rate base as agreed upon by the company and the city as the point from which the start was made when the present operating arrangement was put into effect.



### Abandonment of Alameda Line Approved

Holding that the service on the Fourteenth Street-Alameda Pier suburban line of the Southern Pacific Company is a duplication of the service furnished via the Seventh Street line and the Eighteenth Street line to the Oakland Pier, the California Railroad Commission on Dec. 8 authorized Southern Pacific Company to cease the operation of the Fourteenth Street-Alameda Pier suburban service or the crosstown Oakland-Alameda line on Dec. 27.

The Southern Pacific Company operates across the Harrison Street Bridge a suburban service between Fourteenth Street, Oakland, and the Alameda Pier, also a street car service from the Sixteenth Station, Oakland, into Alameda. It was shown that the company has been operating both these lines at a loss for several years.

The commission found that the public is also served by the Twelfth Street line of the San Francisco-Oakland Terminal Railways, and the Southern Pacific Company crosstown service from Oakland to Alameda is also duplicated by service through this territory by the San Francisco-Oakland Terminal Railways.

The commission found that there is at present an economic waste in the maintenance of these lines by the Southern Pacific Company and that further capital expenditures for a new bridge to permit continued operation over the Estuary cannot be justified. In addition to authorizing the suspension of this service the commission directed the Southern Pacific Company to secure from the cities of Oakland and Alameda the necessary authority, if any be required, to relinquish franchises under which these lines are now being operated.

### Consolidation of Philadelphia Companies Urged

Joseph Gilfillan, a director of the Union Traction Company, Philadelphia, who represents a large stockholding interest of the company, has sent a letter to the president and directors of the Union Traction Company, Philadelphia Rapid Transit and the Philadelphia Traction Company, looking to a consolidation of the transit companies of Philadelphia. He points out that any plan looking to the simplification of the present corporate structure should be in the direction of a consolidated ownership of all lines in one corporation.

In the exchange of securities involved, he says, the stock of underlying companies, which own the tracks and franchises would be represented by a first mortgage bond issue secured upon these properties, while the shares which represent the money heretofore successfully spent in the improvement of these properties would be represented by first and second preferred stock, leaving to present operating company, the Phila-

delphia Rapid Transit Company, the common stock interest and the control and management of the system. It is pointed out that the lines in consolidated ownership would amply secure a sufficient bond issue to finance the consolidation.

### More Funds for Railway

#### New Jersey Road Would Sell Terminal and So Secure Money for Railway Business

Sale of the Public Service Terminal in Park Place, Newark, by the Public Service Railway to the Public Service Corporation is proposed in an application for approval filed with the Public Utility Commission. The application indicates a plan to enlarge the terminal, which the railway is not in a position to do because of lack of available funds. In fact, construction of a seven-story addition to the building has already begun.

The purchase price stipulated in resolutions adopted by the directors of the railway is \$2,500,000 subject to a mortgage of \$5,000,000 executed by the Public Service Newark Terminal Railway, formed to build the terminal, and subsequently merged with the Public Service Railway.

Upon confirmation of the proposed sale the agreement between the associated corporations contemplates a renewal of the fifty-year lease, under which the Public Service Railway rented certain space, including the concourse, offices and space occupied by the railway tracks, at an annual rental of \$330,240.

The application sets forth that occupants of the terminal, which include the Public Service Gas Company and the Public Service Electric Company, desire additional office space and that the railway deems it inadvisable, if it had the available funds, which it has not, to make the necessary capital investment for the enlargement. The application sets forth further that:

Such sale will put the property in the possession of an owner which can advantageously make such enlargement, and will in addition thereto put your petitioners (Public Service Railway) in possession of considerable funds to assist it in and about its railway business.

Upon the merger of the Public Service Newark Terminal Company and the Public Service Railway in 1915 the lease between the two companies was canceled, the railway becoming the owner instead of the lessee of the terminal property. The present proposition contemplates the revival of this lease for the remainder of the fifty-year period for which it was originally drawn, the Public Service Corporation instead of the terminal company becoming the owner and lessor.

The annual rental under the terms of the revived lease will remain at \$330,240 until 1965, at which time it may be renewed at the option of the railway on terms to be agreed upon. In the event of a disagreement the rental terms would be settled by arbiters, one chosen by the Public Service

Corporation, one by the Public Service Railway and the third by the two already chosen.

### Auction Sales in New York

At the public auction rooms of A. H. Muller & Sons, New York, the following securities were sold on Dec. 19:

392 shares New York Railways Company, \$1 lot.  
 250 shares Buffalo & Lake Erie Traction, common, \$8 lot; 250 shares of preferred, \$80 lot, and \$50,000 first mortgage 5 per cent bonds, 10½ per cent.  
 \$2,000 New York Railways 4 per cent first mortgage bonds, due 1942, \$300 lot.  
 457 shares Aurora, Elgin & Chicago Railroad common, \$100 each, \$3 lot.  
 333 shares Western Ohio Railroad certificates of deposit, \$100 each, \$6 lot.  
 \$1,000 Nashville Railway & Light Company cons. 5 per cent bonds, due 1953, 3½ per cent.  
 100 shares Interborough Consolidated Corporation preferred, \$100 each, \$8 lot.  
 80 shares Brooklyn Rapid Transit Company (old stock), \$1 lot.  
 \$2,100 Olean, Bradford & Salamanca Railway first and refunding 7 per cent bonds, due 1951, \$50 lot; 105 shares preferred, \$7 lot, and 252 shares common, \$2 lot.

**Trustee Appointed.**—George M. Bryne of Winchester, Mass., has been appointed by Governor Cox to the position of trustee of the Eastern Massachusetts Street Railway, to succeed the late Samuel W. McCall, who lived in the same city. Mr. Bryne is a member of the firm of George M. Bryne & Company, builders and contractors, and has been chairman of the Winchester Board of Selectmen for a number of years.

**Line Sold.**—The Southwestern Traction Company, which operates between Belton and Temple, Tex., has been sold at trustee sale for \$15,000 and the assumption of the taxes and paving obligations that are outstanding against the company. It was bid in by J. C. Houser, present manager of the company, for himself and H. H. Hamilton of New York City. They will try to operate the line and make needed improvements to its track and equipment. The line was built in 1903.

**\$712,000 Equipment Trust Authorized.**—The San Diego Electric Railway, San Diego, Cal., has been authorized by the California Railroad Commission to execute and enter into an equipment trust agreement and second mortgage, guaranteeing payment of \$712,000 of 6 per cent equipment trust certificates recently authorized by the Railroad Commission to cover the cost of a large amount of electric railway equipment.

**To Pay Interest.**—Samuel D. Tuell, receiver of the Houghton Traction Company, Houghton, Mich., notified the Old Colony Trust Company, trustee, Boston, that pursuant to the order from the United States District Court for the Northern Division of the Western District of Michigan, under date of Nov. 26 last, he would pay the coupon interest on Dec. 15 which became due Jan. 1, 1923, on the first mortgage 5 per cent gold bonds dated Oct. 1, 1908. Payment will be made with interest on overdue interest from Jan. 1, 1923, up to Dec. 15, at the rate of 5 per cent per annum.



## Traffic and Transportation

### Higher Fare in Cincinnati on Jan. 1

Formal announcement of an increase of  $\frac{1}{2}$  cent in fares was made by the Cincinnati Traction Company on Dec. 15. The new fare,  $8\frac{1}{2}$  cents, will become effective Jan. 1. Preliminary reports of the receipts and expenditures of the company for October and November made to William Jerome Kuertz, Director of Street Railways, left no room for doubt that the fare would be increased. Walter Draper, vice-president of the traction company, said that the increase was necessary to meet the company's obligation to pay the city franchise tax. During the past three years the franchise tax has not been considered as a factor in rate making, since under the terms of the franchise the tax is not to be paid unless earned. By consent of the traction company and City Council the obligation to the city was suspended provided that rates would not be increased. That action was taken upon the ground that it would be unfair to the car riders to have the tax continued as a factor where it could not be paid since it had not been earned by the company. Last September, however, the company gave notice of an increase from  $7\frac{1}{2}$  to 8 cents effective on Oct. 1, and immediately the provision of the franchise relating to the city tax again became operative.

### Favor Change in Night Service in Boston

The Boston Elevated Railway has tried a new method to ascertain the will of the people regarding the operation of its cars in night service, in which the company made a change some time ago. All-night service into Tremont Street subway in Boston was started Oct. 14. Later workers presented petitions claiming that only those who worked in the neighborhood of Scollay Square, Park Street and Boylston Street stations were at all benefited by the new order. All the others who were used to getting the cars at their doors were forced to walk. It was their contention that conditions would be improved if the old service were restored, because most of the employees, tired after a night's work, might go from their work to the street and get the car without the necessity of a long walk.

The trustees refused the petition, but Chairman Jackson at the time said that the decision was not final and that the experiment would be given a fair trial. The latest move on the part of the company has been to submit the question to a vote by the users of the night cars, and it says it will abide by the results. Ballots were handed out to all the riders one day with instruc-

tions for marking crosses against the plan preferred. Of 3,663 votes cast, 1,747 were for the plan to which a change had been made and 1,535 were for the old plan. In this test 247 of the riders stated affirmatively that they had no choice and 134 returned the ballots without marking them in any way.

### Fare Injunction Denied to City of Ottumwa

The injunction suit brought by the city of Ottumwa against the Ottumwa Railway & Light Company has dragged its way to a conclusion in the courts. The injunction has been denied by the Supreme Court of the State. The 7-cent fare is held to be legal and just, and all that remains is for the costs to be assessed.

In commenting on the case the Ottumwa *Courier* said:

It is not difficult to recall the suit against the company was inherited by the present city administration from the last Leeny régime, and it is not difficult to recall the circumstances under which the fight originated. An effort was made to compel the company to provide service at a rate which involved a loss. If the courts had ordered compliance there could have been but one of two results. Either the company would have been forced into a receiver's hands eventually, or the rates for electric service and steam heating would have been increased to a point at which the resulting revenues would have wiped out the deficit from railway operation.

If a community must have street cars—and every going community needs them—it must provide a revenue sufficient to justify investors in financing a railway or it must tax itself to pay for the upkeep of its own system.

### Fare Validity in Milwaukee Questioned

Basing his plea on the recent decision of the United States Supreme Court in the case of the Superior Water, Light & Power Company, of Superior, Wis., a Socialist Alderman of Milwaukee has presented to the Common Council for its approval a resolution requesting that the city attorney take steps to determine whether or not the Milwaukee Electric Railway & Light Company is at present illegally charging a cash fare of 7 cents instead of 5 cents in contradiction to a franchise ordinance passed by the Common Council in 1900 which was to endure until Dec. 31, 1934.

Interpreting the Superior decision as it applies to the Milwaukee situation, it is obvious that the fare set forth in the 1900 franchise is binding and that the Wisconsin Railroad Commission had no power or authority to alter the rates. The Wisconsin Supreme Court, however, has repeatedly decided that control of rates passed to the Railroad Commission, when state utilities were placed under its jurisdiction.

In the case of the Superior Water, Light & Power Company the United

States Supreme Court decided against the State Supreme Court and the city in the methods adopted to acquire by condemnation proceedings the electric, gas and water plants of the Superior Water, Light & Power Company by terms other than those specified in the franchise, which were in accordance with the Wisconsin Public Utilities act of 1907. In upholding the company the court asserted that the franchise and its amendments constituted a valid contract, not subject to abrogation by the state public utilities act.

**Adopts Weekly Pass.**—The Geneva, Seneca Falls & Auburn Railroad, Geneva, N. Y., has started the sale of weekly pass tickets at \$1 each. Tickets are good for unlimited trips for seven days, commencing Monday of each week, on all Geneva city line cars and on interurban cars in Geneva and east to and including Lake Road stop.

**Change Made in Ticket Use.**—Regulations governing the sale and use of the forty-six-ride school commutation ticket books for use on the lines of the Albany Southern Railroad, Rensselaer, N. Y., have been changed to provide that on and after July 1, 1924, the time limit on such tickets will be fifty days from date of sale, instead of within the school year in which purchased as at present. The use of school tickets will be confined to pupils and teachers traveling to attend schools where sessions are held at least five days each week.

**Fare Hearing Adjourned.**—Hearing on the application of the Detroit United Railway to the Michigan Public Utilities Commission for permission to increase its rate of fare from 2 cents to  $2\frac{1}{2}$  cents a mile was recently adjourned. It was brought out in the testimony at the hearing on Dec. 17 that the Detroit United Railway had lost more than \$1,000,000 in the last nine months, part of which was due to a \$500,000 annual increase in wages of employees. It is contended that the line had also suffered considerably from bus competition. The company claims that in order to earn a 7 per cent return upon the utility commission's valuation of \$26,691,320, the rate of fare would have to be raised to  $2\frac{1}{2}$  cents a mile. Company officials agreed, however, to issue commutation tickets at reduced rates.

**Service Restored.**—After a trial period of a month and a half in which less frequent schedules were in effect, the Clinton, Davenport & Muscatine Railway will shortly restore the hour and one-half service on its interurban line to Muscatine, Iowa.

**Illness Delays Decision.**—Serious illness of Mrs. Henry A. Dubbs, wife of Henry A. Dubbs, Master in Chancery, who heard the pleas of the city of Denver attorneys and that of the Denver Tramway relative to the 6-cent fare, prevents the Judge from taking an active part just now and the decision that was expected some time during December will most likely not be given until after the New Year.



## Personal Items

### D. C. Green Named Manager of Utah Traction

D. C. Green, formerly vice-president and general manager of the Fort Smith Light & Traction Company of Arkansas, has been named vice-president and general manager of the Utah Power & Light Company and vice-president of the Utah Light & Traction Company, Salt Lake City. He succeeds S. R. Inch, who has accepted an important position with the Electric Bond & Share Company in New York. Mr. Green has had a wide experience in the management of electric and gas utilities. Early in 1915 Mr. Green came from the northwest to Salt Lake City as manager of the Salt Lake division of the Utah Power & Light Company. He left Salt Lake City in the fall of 1916, and since that time has been associated with various utilities in a managerial capacity.

The change will not sever Mr. Inch's connection with the Utah companies, since he remains a vice-president and director of both. Mr. Inch first came to the Utah Power & Light Company as general superintendent early in 1913. In January, 1918, he succeeded C. E. Groesbeck as vice-president and general manager of the Utah Power & Light Company and vice-president of the Utah Light & Traction Company.

Joseph T. Hissem, who has been secretary of the Galna (Ill.) Chamber of Commerce and secretary of the Galena Red Star Merchants' Association, has taken a position as auditor in the general offices of the Northern States Power Company, at Minneapolis.

B. E. Bramble, Champaign, Ill., for many years auditor of the Illinois Traction System, has been appointed comptroller of the North American Light & Power Company, according to an announcement made by William A. Baehr, president of the company. Mr. Bramble will divide his time between the Chicago and Champaign offices of the company.

Arthur P. Russell, vice-president of the New York, New Haven & Hartford Railroad, with headquarters at Boston and New Haven, has in addition to his present duties assumed jurisdiction of public relations and publicity. He will now have charge of matters tending to promote harmonious relations between the company and the public and will supervise the preparation of general information to be issued by the management.

Thomas F. Kennedy has recently been appointed new-business manager of all of the Cities Service properties, with headquarters in New York City. His connection with the Doherty interests started in 1901, when he joined the Denver Gas & Electric Light Company as a meter reader. Since then he

has been steadily advancing until in 1920 he was selected as manager of the new-business department of the Western Light & Power Company, with headquarters in Boulder, Col. In July, 1922, he came to New York as assistant to George Williams, whom he now succeeds as head of the new-business work of the Doherty organization.

### Mr. Arnold Joins North Shore

Eastern Wisconsin Electric Official Will Have Charge of Buses Used by Interurban

Bert Arnold, Oshkosh, has been called to the post of manager of the motor coach department of the Chicago, North Shore & Milwaukee Railroad, effective Jan. 1. He will have his headquar-



B. W. Arnold

ters at Milwaukee and will report to C. E. Thompson, assistant to the president. Mr. Arnold will have charge of the operation of the motor coach lines of the company and of the expansion of this service.

To the railway men in the Wisconsin territory Bert Arnold is familiarly known as the Wizard of Oshkosh. He is at present manager of railways of the Eastern Wisconsin Electric Company, with jurisdiction over the local properties in Oshkosh, Fond du Lac and Sheboygan and the interurban line between Neenah and Oshkosh. It may sound like overdoing the thing to say that Mr. Arnold knows everybody and everything in the territory in which his company operates, but the statement is substantially true. It is just about six years ago that Mr. Arnold went to Oshkosh. At that time public relations were anything but good and the physical property of the company was somewhat below par. All this Mr. Arnold has corrected. As for co-operation, even the independent busmen use the railway station as a ter-

minal at his suggestion. He demanded a square deal at the hands of the local papers and he has got it. It was Bert Arnold who in 1922 put across in magnificent shape the first separate convention of traction men in Wisconsin.

Mr. Arnold brought to the position at Oshkosh a background of wide experience in railway work. He entered the field in 1899 with the Wheeling & Lake Erie Railway. Next he was dispatcher of the Lake Shore Electric Railway, Cleveland, Ohio, and chief dispatcher of the Muncie, Hartford & Fort Wayne Railway, Muncie, Ind. In 1907 he became superintendent of the southern division of the Illinois Traction System. From his headquarters with that company at Springfield he was transferred to Decatur as superintendent of all lines entering that city, and later was made chief clerk to the general superintendent of the system. In 1910 he was made superintendent of transportation of the Chicago, Ottawa & Peoria Railway. In 1917 he joined the Eastern Wisconsin Electric Company. The career and the work of Mr. Arnold were reviewed at length in the ELECTRIC RAILWAY JOURNAL, issue of Sept. 9, 1922.

## Obituary

Charles Frankel, president of the Frankel Solderless Connector Company, New York, died suddenly on Dec. 18. Mr. Frankel was sixty-one years of age. He was an outstanding figure in electrical manufacturing activities and was prominent in civic affairs.

F. B. Myers, former president of the Cleveland, Southwestern & Columbus Railway, Cleveland, Ohio, died in Ashland, Ohio, on Dec. 3. He was a director of the Nickel Plate Railroad and of the Union Trust Company, Cleveland, and had other interests. Early in 1921 he resigned as president of the Cleveland, Southwestern & Columbus Railway, so as to give his entire attention to the Ashland Pump & Hay Tool Works and the Faultless Rubber Company. Mr. Myers was seventy-four years old.

Ralph E. Gilman, special engineer in charge of turbo-generator engineering of the Westinghouse Electric & Manufacturing Company, died in Los Angeles on Dec. 5. Mr. Gilman was graduated from the Leland Stanford, Jr., University, Palo Alto, Cal., receiving his E.E. degree in 1898. He entered the employ of the Westinghouse company immediately after his graduation and completed the apprentice course of the company in January, 1901. The next two years he was located in the engineering department. In 1903 he was transferred to the British Westinghouse Company and spent the next five years in London, England. In 1908 Mr. Gilman was recalled to East Pittsburgh and assigned to special duties in the power engineering department. He was in this department continuously until the time of his death.



# 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

## Philippine Mahogany Trim

Lighter than Birch and as Cheap as Cherry—Location of Market Affects Price

A departure from usual car building practice is embodied in the plan of the Chicago Surface Lines to use Philippine mahogany instead of birch or cherry for its interior car trim on account of its lightness and fine appearance. Although this wood is exported under the trade name of "Philippine mahogany," its proper designation is "red lauan." Quarter sawn, it has a beautiful ribbon grain, which, with its dark reddish-brown color, makes it useful for interior finish, furniture, etc. Whether or not it is superior to cherry in appearance is largely a matter of taste. Birch in its natural state is not particularly beautiful, but it possesses properties which make it possible to stain it to resemble almost any hard wood.

In weight, red lauan possesses advantage over birch and a slight advantage over cherry. The weights of the various woods at about 8 per cent moisture content, which is approximating the condition under which the material is used in interior car trim, are: birch, 42 lb. per cu.ft.; black cherry, 34 lb. per cu.ft.; Philippine mahogany, 33 lb. per cu.ft.

### QUANTITIES OF TIMBER AVAILABLE

Because they are grown over such wide areas, it is difficult to estimate the exact amounts of these three woods which are available for commercial purposes. According to official estimates, however, there is in the United States about 19,000,000,000 ft. b.m. of birch of all kinds and 500,000,000 ft. b.m. of cherry. A commercial handbook prepared in connection with the Commercial and Industrial Fair held in Manila last February makes the statement that there are in the Philippines 192,000,000,000 ft. b.m. of the woods of the *dipterocarp* family, which includes Philippine mahogany.

Birch is the cheapest of the three woods. Recent prices prevailing in New York City for red birch varied from \$90 to \$145 per 1,000 ft. b.m. and for white birch from \$85 to \$130 per 1,000 ft. b.m. The price of cherry varies from \$90 to \$180, depending on the quality. Philippine mahogany costs from \$150 to \$170 per 1,000 ft. b.m., depending on its freedom from pin worm holes, its color, etc. In the matter of price, therefore, the advantage is plainly with birch.

An item which should receive consideration in connection with the price of Philippine mahogany is the fact that this wood is likely to have many small

pin holes. This is not considered technically to constitute a defect in the wood, and there is, therefore, no way for the purchaser to guard against this fault. Even the best grades of this wood have pin worm holes, and it is necessary to fill them and then rub off the surface with a cloth. The operation is quickly performed and does not greatly affect the cost, but the necessity for it should receive due consideration when Philippine mahogany is compared with birch and cherry, which do not require filling and polishing.

If an inland market is considered instead of that of New York City, the price differential in favor of birch increases, because that wood is available on short haul from the Lake states. In that region cherry is on an even basis with mahogany, because of the freight rates for the latter from the seaport to the interior. For example, birch was quoted on the Chicago market as late as Dec. 7 at prices from \$60 for the poorer grades to \$130 for the higher grades. This is approximately a third less than the New York price quoted in the earlier paragraph. In fact, for all cities other than seaports, Philippine mahogany would be at a disadvantage because it would necessarily bear the expense of railroad freight haul, as well as ocean freight. Birch is grown in the Appalachian Mountain region and for that section of the country has therefore comparatively short freight hauls. A large proportion of the cherry produced in this country comes from the same territory and would enjoy the same advantage.

## Lumber Production at High Level All Year

Lumber production in the United States based on figures collected by the Department of Commerce has averaged more than 230,000,000 ft. b.m. per week since April 1. The largest production in a single week was for the seven days ending Nov. 10, when the maximum of 241,000,000 ft. b.m. was attained. Since that time there has been a slight falling off with the week ending Dec. 1, showing a production of only 225,000,000 ft. b.m. The week ending Dec. 8, however, showed an improvement with a production of 232,000,000 ft. b.m.

The rate of production for the year 1923 is well above that of the last few years. In 1922 the average weekly production was below 200,000,000 ft. and in 1921 it was below 150,000,000. The years 1919 and 1920 were nearly identical with an average weekly production of 171,000,000 and 173,000,000 ft. b.m.

## Big Business Expected by Westinghouse Company

Present business bookings of the Westinghouse Electric & Manufacturing Company indicate good results for the second half of the fiscal year. For the first six months of the fiscal year through Sept. 30 the earnings were substantially equal to a full year's aggregate preferred and common dividend requirements. It is expected that operations for the first eight months of the year will show a net available for dividends running between \$14,000,000 and \$15,000,000.

The company is experiencing a resumption of business activity approaching spring and early summer levels, which is keeping the plant operations at capacity. Unfilled orders now approximate \$75,000,000. The company is making an effort to reduce unfilled orders, in order to make delivery on contracts and take care more efficiently of business offered. The Philadelphia and East Pittsburgh plants are operating day and night. The outlook continues satisfactory and the sales department states that there is no indication of slackening in forward business. Bookings in November were larger than in October, which in turn exceeded the September total of \$10,600,000. Indications are that the total for the year will probably be as large as last year, when the amount received was \$152,328,564.

## Canadian Control Obtained by General Electric

The General Electric Company has secured control of the Canadian General Electric, approximately two-thirds of the total \$10,800,000 outstanding common stock of the Canadian company having been deposited with it.

As was noted in the ELECTRIC RAILWAY JOURNAL, issue of Oct. 27, the directors of both the American and Canadian companies approved the offer of the General Electric Company to purchase the common stock of the Canadian General Electric. Under the plan common stockholders of the Canadian company were offered \$62.50 cash and one share of new \$50 par value 7 per cent cumulative preferred stock of the Canadian company for each share of the common.

## Metal, Coal and Material Prices

Metals—New York	Dec. 18, 1923
Copper, electrolytic, cents per lb.	13.125
Copper wire base, cents per lb.	15.75
Lead, cents per lb.	7.35
Zinc, cents per lb.	6.52
Tin, Straits, cents per lb.	47.125
<b>Bituminous Coal, f.o.b. Mines</b>	
Smokeless mine run, f.o.b. vessel, Hampton Roads, gross tons	\$4.425
Somerset mine run, Boston, net tons	2.175
Pittsburgh mine run, Pittsburgh, net tons	2.05
Franklin, Ill., screenings, Chicago, net tons	1.975
Central, Ill., screenings, Chicago, net tons	1.50
Kansas screenings, Kansas City, net tons	2.00
<b>Materials</b>	
Rubber-covered wire, N. Y., No. 14, per 1,000 ft.	\$6.65
Weatherproof wire base, N. Y., cents per lb.	17.50
Cement, Chicago net prices, without bags	\$2.10
Linseed oil (5-bbl. lots), N. Y., per gal.	\$0.93
White lead, in oil (100-lb. keg), N. Y., cents per lb., carload lots	11.25
Turpentine, (bbl. lots), N. Y., per gal.	\$0.935



### Steel Sales Below Normal Capacity

A survey by the Department of Commerce of the present capacity of the structural steel fabricating industry in the United States indicates that the normal capacity is about 250,000 tons per month. In no month of the present year, however, has the actual tonnage booked closely approached the capacity. The tonnage in March was 235,000, or about 94 per cent of the shop capacity. April was slightly lower, and since that time the figure has been running at about 50 per cent.

### Booklet Describes Trade Terms

The recognized interpretation of trade terms and abbreviations as in use in the larger commercial countries is contained in a booklet just issued by the International Chamber of Commerce, at Paris. Copies of the publication, which is both in English and French, are being distributed among the American members of the International Chamber. Non-members in the United States may obtain copies through the secretary, American Section, International Chamber, at Washington.

### Victoria Exhibit in Prospect

The Victoria Electrical Federation is planning an electrical exhibition to be held in Melbourne, Australia, during September, 1924. The federation hopes to cover the entire electrical industry, showing actual working models of the various types of apparatus, including machine, transport, lighting and other industrial equipment. The fair will last four weeks.

### Rolling Stock

Interstate Public Service Company, Indianapolis, Ind., during 1923 ordered twenty new cars at a cost of approximately \$250,000. This new equipment includes three club and dining cars, three sleepers, two motor express cars, three express trailers and ten live stock cars. This equipment will be built by the American Car & Foundry Company. Reference has been made previously in the *ELECTRIC RAILWAY JOURNAL* to a part of this order and elsewhere in this issue some of the equipment is described.

Twin City Rapid Transit Company, Minneapolis, Minn., rebuilt during 1923 seventy-five double-truck two-man cars into front exit cars.

Eastern Wisconsin Electric Company, Oshkosh, Wis., has purchased a snow plow.

Interborough Rapid Transit Company, New York, N. Y., has placed orders for 100 new steel motor cars with the American Car & Foundry Company for use in the subway in accordance with the order of the commission issued last August. The cars will cost \$30,000 each, making a total expenditure of

\$3,000,000. According to the commission's order, these cars must be ready for operation in the fall of 1924. Under the plan the Interborough Rapid Transit Company, the Rapid Transit Subway Construction Company and the New York Trust Company, as trustees, have entered into an agreement providing for the issuance of \$2,250,000 in equipment trust certificates, bearing 6½ per cent interest, and issued in \$1,000 denominations. This is the second order for 100 cars which the Interborough has placed at the suggestion of the commission following the investigation of the service and facilities of the subway in 1922. The 100 trail cars ordered last year have been delivered and are now in daily service.

### Track and Line

Madison Railways has been granted an extension of time from Dec. 1, 1923, to Oct. 1, 1924, in which to carry out the work of double-tracking University Avenue from Randall Avenue to Breese Terrace. The company is now confronted with the immense improvement program of first finishing up the work on Breese Terrace next spring followed by the double-tracking of University Avenue, improving its East Johnson Street line and extending its line on Monroe Street from Harrison Street to Crandall Street.

New York State Railways has completed the Court Street extension to the works of the Onondaga Pottery Company. The men employed at the pottery plant formerly were compelled to walk nearly half a mile at either end of the day.

Shreveport Railways contemplates adding 3,000 ft. of new track to its line within the near future, according to H. B. Hearn, president. Arrangements for a right of way have been completed for the Jewelin Extension of the Fair Grounds Highland car and an ordinance has been prepared calling for a special election to be presented to the City Council of Shreveport within the week, authorizing the granting of a franchise. The new terminal will reach the city limits and will extend along the Fair Grounds property, paralleling Greenwood Road, thence to Jewelin Road.

New York, N. Y.—The American Bridge Company, a subsidiary of the United States Steel Corporation, has received a contract for 4,400 tons of steel for subway route 52 in Queens.

Walla Walla Valley Traction Company, Walla Walla, Wash., will build a branch line from Freewater to Umapine, at a cost of \$100,000. The Oregon-Washington Railroad will have running rights over the line and will share in its construction.

Eastern Wisconsin Electric Company, Oshkosh, Wis., will spend \$5,624 in co-operating with officials of Oshkosh in completing one of the most extensive street improvement programs ever un-

dertaken, which will be started in the spring of 1924 on nine of the principal streets of the city, estimated to cost around \$124,000. The company will pay \$2,317 as its share of paving work on Merritt Street from Linde Avenue to Evans Street and \$3,307 on West New York Avenue from Jackson Drive to the west side of Elmwood Avenue.

Pacific Electric Railway, Los Angeles, Cal., has been authorized to extend its Second Street car service in Long Beach to Alamitos Bay and Maples. Work will be started within the next month.

### New Advertising Literature

Truscon Steel Company, Youngstown, Ohio, has issued in pamphlet form "Reinforcement in Concrete Roads Worth Its Cost." This is a reprint from *Engineering News-Record* of Nov. 15, by H. Eltinge Breed, consulting highway engineer, New York.

Silent Hoist Company, New York, N. Y., has issued Bulletin No. 22 descriptive and illustrative of the Silent Hoist electric car puller. The bulletin briefly but comprehensively describes its design and construction, as well as its utility.

Johns - Pratt Company, Hartford, Conn., manufacturer of fuses, has issued a Christmastide folder extending the season's greetings.

Foamite-Childs Corporation, Utica, N. Y., fire protection engineers and manufacturers of all types of fire-fighting devices, has published a new sixteen-page illustrated booklet, "The Essentials of Self-Protection Against Fire." The booklet presents the whole subject of first-aid protection against fire in an unbiased manner. A large reference chart supplements the text with a complete tabulation of the characteristics of all types of chemical fire extinguishers. The booklet is attractively printed in the standard size, 5½ x 8½, for convenient filing and permanent reference. Copies may be had on request addressed to the company at Utica.

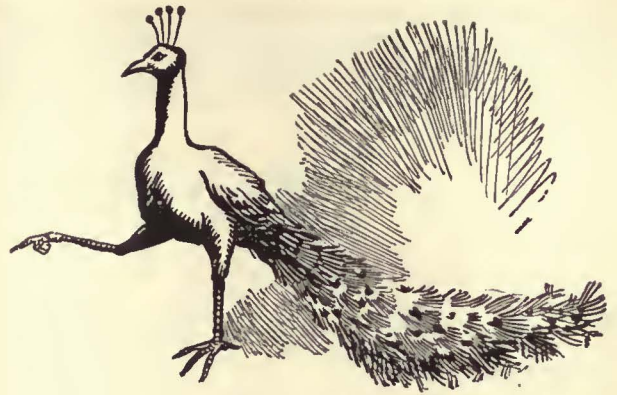
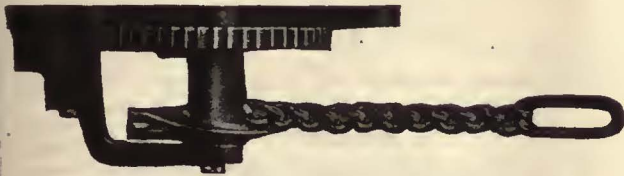
Reliance Electric & Engineering Company, Cleveland, Ohio, has issued an illustrated bulletin, No. 5018, which gives the complete details of the design and construction of Type AA Reliance induction motors.

Bridgeport Brass Company, Bridgeport, Conn., is proud of its home city. It has issued an attractively printed folder entitled "See and Know Bridgeport—The Park City. The Industrial Capital of Connecticut." Besides containing a map of the city, hints on what to do and where to go are featured for the traveler in the city. Even the motorists will find the pamphlet instructive, as it contains some general rules on traffic and parking. The folder contains many pretty pictures of beautiful homes and points of interest within the boundaries of Bridgeport.



## Now It's "air brakes for buses!"

It's a fact! They were exhibited at the A. E. R. A. Convention. But you'll notice, please, that they still retain the old familiar emergency brake applied by hand.



## Why hand brakes for street cars?

Common sense consideration for safety dictates that any vehicle carrying large numbers of human beings should have adequate emergency brake equipment. Even the ordinary two-passenger automobile has its double set of brakes.

The best air-brake system ever devised cannot be expected to function, if the power goes off the line. What then, will hold your loaded cars on grades? Will your present hand brake do it?

*Try them and find out!*

## PEACOCK BRAKES

are designed to stop the car and hold it under worst conditions of load and grade. *They do it!*




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### National Brake Co., Inc.

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*Canadian Representative:*

Lyman Tube & Supply Company, Limited, Montreal, Canada



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Consultant on Fares, Buses, Motor Trucks

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The Most Successful Men in the Electric Railway  
Industry read the

ELECTRIC RAILWAY JOURNAL

Every Week



**EDWIN WORTHAM, E.E.**  
*Consulting Engineer*  
 Valuations of Electric Railways and  
 Utilities of All Kinds  
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The Most Successful Men in the Electric Railway  
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**ELECTRIC RAILWAY JOURNAL**  
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**THE P. EDWARD WISH SERVICE**  
 50 Church St. NEW YORK      Street Railway Inspection DETECTIVES      131 State St. BOSTON

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



**Isha**

Among the mixed tribes in the Himalayas, a few beliefs are common to all  
 —one being that witches are everywhere  
 —vile creatures with long spotted tongues and long wild hair and long curved finger nails  
 —visible only to those gifted with second sight  
 —so that a person with proper outward appearance may still be a witch  
 —and the only test is to duck her in a pond (isha)  
 —for it is considered that a witch takes to water like a hen  
 —which prompts us to state that there are plenty of carbon brushes masquerading with the looks of Morganite  
 —but with inherent qualities to witch your commutation  
 —and you don't find it out until you have made the only test  
 —by putting them to work  
 —and then it's too late for economy or good service  
 —period.



**Main Office and Factory:**  
 519 West 38th St., New York  
**DISTRICT ENGINEERS AND AGENTS**  
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**Cincinnati,** Electrical Engineering & Mfg. Co., 607 Mercantile Library Building.  
**Cleveland,** Electrical Engineering & Mfg. Co., 422 Union Building  
**Buffalo,** Electrical Engineering & Mfg. Co., 409 Lafayette Building.  
**Philadelphia,** Electric Power Equipment Corp., 412 North 18th St.  
**Baltimore,** O. T. Hall, Sales Engineer, 1926 Edmondson Ave.  
**Revere, Mass.,** J. F. Drummey, 75 Pleasant Street  
**Los Angeles,** Special Service Sales Co., 502 Delta Building.  
**San Francisco,** Special Service Sales Co., 202 Russ Building.  
**Toronto, Can.,** Railway & Power Engineering Corp., Ltd., 131 Eastern Ave.



# How the Dayton

## 3

The 1923 Committee on Way Matters of the A.E.R.A. reported at the Atlantic City convention as follows:

*“It was agreed that a substitute tie should meet the following requirements:*

- |  |   |   |
|--|---|---|
| 1. Resiliency.   | → | The fundamental principle of the DAYTON RESILIENT TIE.  |
| 2. Hold rail to gage.  | → | Held securely by bolts accurately located in steel cross members.   |
| 3. Provide sufficient bearing area.  | → | By protecting the concrete from breaking or pulverizing, the Dayton Tie converts the entire roadbed into bearing surface. |
| 4. If expected to last for more than one set of rails, that easily renewable fastenings be provided. | → | Readily accessible bolt fastenings provide for rail renewal.  |
| 5. Be easily installed by ordinary track workers.  | → | Eight ordinary track laborers, by actual test, have laid 1,000 feet of Dayton Resilient track in a single day.            |
| 6. Cost installed should be reasonable.”   | → | Dayton Resilient Tie Track costs \$2,000 per mile less than wood ties in gravel ballast.                                  |

# DAYTON



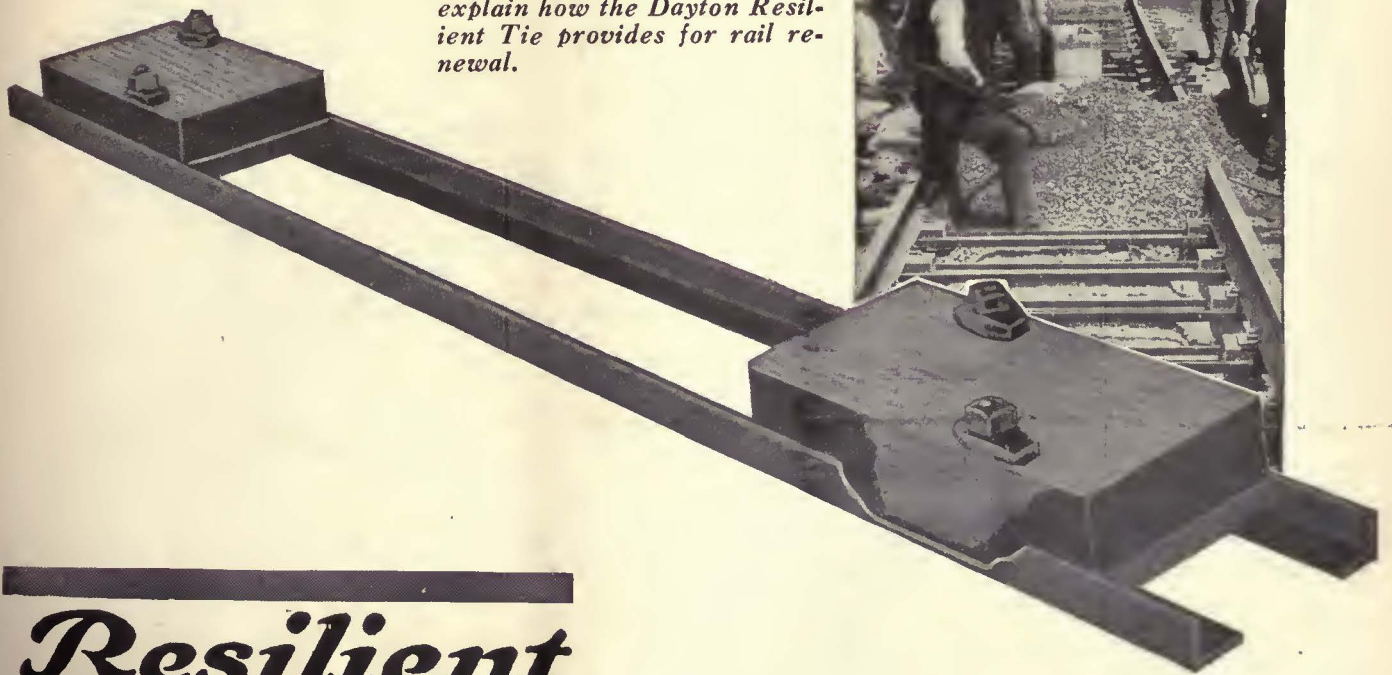
# Provides Sufficient Bearing Area"

By protecting the concrete from breaking or pulverizing the Dayton Resilient Tie converts the entire roadbed into bearing surface. The concrete is protected from shocks and vibration by the resilient feature of the Dayton Tie.

All the bearing surface that the wood tie provides is its own area. A substitute tie *without resiliency* provides no more, for it transmits all shocks and vibration to the concrete—and very soon has no foundation for itself.

And so, for the third requirement of a "substitute tie," it is seen that the DAYTON Tie is SUPERIOR to the tie for which it is to be substituted!

*In the next advertisement we explain how the Dayton Resilient Tie provides for rail renewal.*



**Resilient  
TIE**

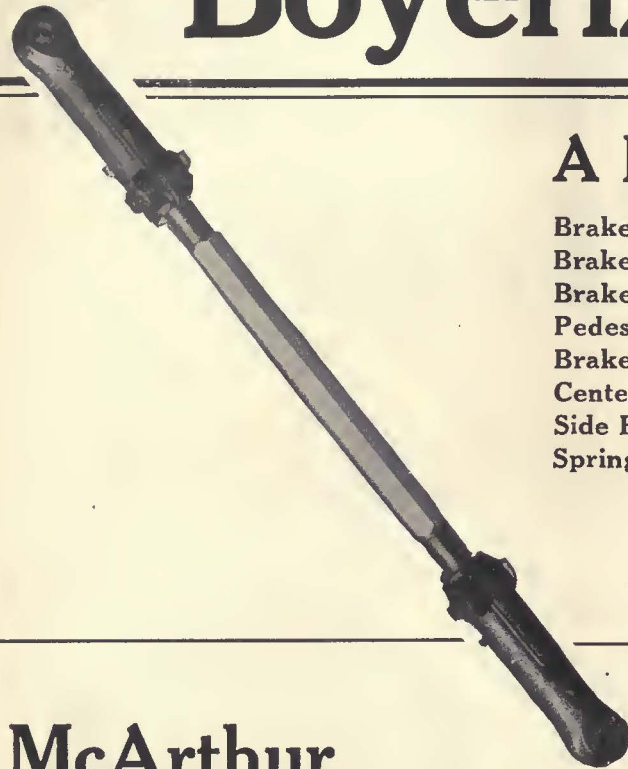
THE DAYTON MECHANICAL TIE CO.  
707 Commercial Bldg.  
DAYTON, OHIO



# Boyerized Parts!

## A List of Money Savers

Brake Pins	Spring Posts
Brake Hangers	Bolster and Transom
Brake Levers	Chafing Plates
Pedestal Gibs	McArthur Turnbuckles
Brake Fulcrums	Manganese Brake Heads
Center Bearings	Manganese Truck Parts
Side Bearings	Bushings
Spring Post Bushings	Bronze Bearings



## McArthur

## Turnbuckles

McArthur Turnbuckles are just one example of the Boyerized line. The illustration below is an enlarged view of the business end of the McArthur Turnbuckle.



Built to last—like all the Boyerized stuff!

But more than that—the old-style jam-nut idea has been scrapped, and an efficient spring-equipped split-clamp principle has been substituted. Now it only takes a pocket-wrench and a moment's time to make an adjustment, and tighten it up to stay.

*because—*

the Boyerizing process makes them last so much longer than the usual kind of equipment. Experience demonstrates it. Try them.



## Bemis Car Truck Company

*Electric Railway Supplies*  
Springfield, Mass.

Representatives:

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W. F. McKenney, 54 First Street, Portland, Ore.  
J. H. Denton, 1328 Broadway, New York City, N. Y.  
A. W. Arlin, 772 Pacific Electric Bldg., Los Angeles, Cal.



# The Universal Safety Car



When we talk about efficient service in connection with the Universal Safety Car we don't speak of something that will be or that was, but that IS! These cars *are* giving the service that pleases passengers and keeps the company using them on the upgrade.

It's the proper balance between weight and strength that gives

them the speed and the ability to stand up under all kinds of service. They are economical to operate, low in maintenance costs, and most reasonable in initial cost. Built for one and two-man operation.

*Write for figures before buying new cars.*

**St. Louis Car Company, St. Louis, Mo.**  
 "The Birth place of the Safety Car"



**N**O OTHER gear at any price assures you as good value for your money as the Nuttall BP Helical Gear. It saves your equipment, it saves 70% in gear cost and it lasts four times as long as any untreated gear.

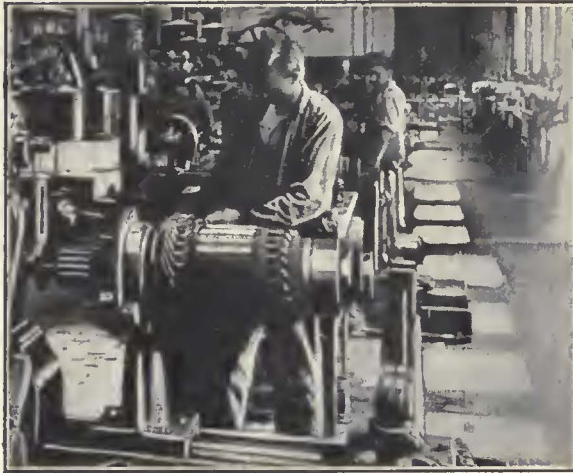
*Can you afford not to have BP Helicals on your equipment?*

**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.



Get better service from armatures with



# IRVINGTON

## Black Varnished Cambric

- 30% Higher Dielectric Strength
- 100% Better Heat Resistance
- 100% More Alkali and Acid Resistance
- 200% Better Aging Qualities
- 200% More Resistance to Oil Than Yellow Varnished Cambric

Send for samples

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ESTABLISHED 1905

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Cleveland, O.  
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Rochester, N. Y.  
T. C. White Elec. Supply Co., St. Louis

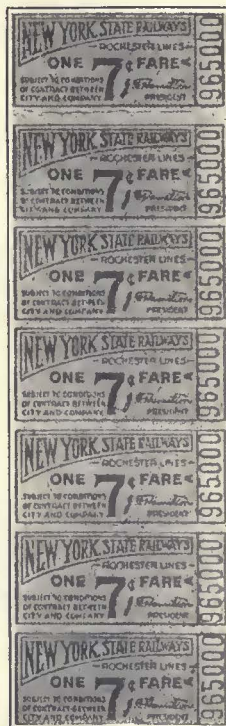
L. L. Fleig & Co.  
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## Right After the Whistle Blows—

How many hundreds of people are depending on your lines to carry them to their homes? How many of them crowd into your cars?

They are in a hurry. They want speed and service! Do they get it?

Globe Tickets and P. M. Coupon Transfers are helping many Electric Railway



Operators to give patrons service at times like these.

Nearly half a century of real experience in making tickets gives us the confidence to say that Globe Tickets will help you.

A word to the wise is sufficient. You can profit by all of our experience, if you will let us help you solve your ticket problems.

Globe Ticket Company, 116 N. 12th Street, Philadelphia, Pa.

Los Angeles

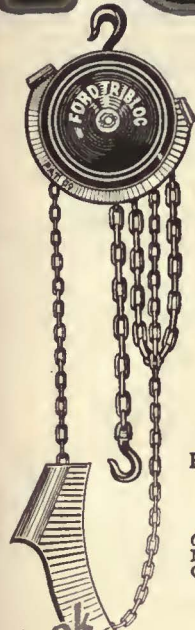
New York

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# FORD

## TRIBLOC CHAIN-HOISTS



Strong and compact. Ideal where heavy lifting must be done frequently, speedily and with highest efficiency. Made in capacities from  $\frac{1}{4}$  to 20 tons.

Write for Catalog 5-B

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2235-D

"Tool Steel" = Quality  
guaranteed and proven  
in

SPUR and HELICAL  
gears and pinions.

The Tool Steel  
Gear and Pinion Co.  
CINCINNATI, O.

### The Differential Car

An automatic dump car, an electric locomotive, a snow plow, and a freight car—all in one. Big savings shown in track construction and maintenance, paving work, coal hauling, ash disposal, snow removal, and freight transportation.

The Differential  
Steel Car Co.  
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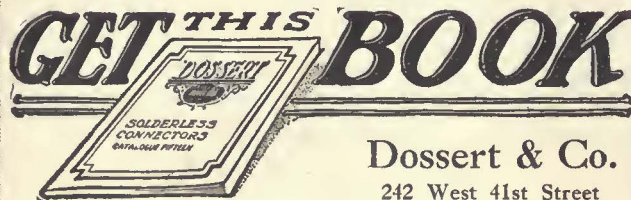
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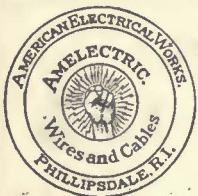
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Lowest Cost                      Lightest Weight  
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for single track block signal protection

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SWITCHES—MATES—FROGS—CROSSINGS  
COMPLETE LAYOUTS  
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Steel Castings Gas Cylinders

ORIGINATORS OF

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**All-metal cross ties**

Types for open and closed tracks  
*"More flexible than wood"*

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Ask for circular on either type. *Prices upon application.*



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Full Revolving  
No Outriggers  
Motor Truck  
Mounting

*Send for Bulletin  
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is turned out with equal care in our shops. The orders we fill differ only in magnitude; small orders command our utmost care and skill just as do large orders. CAMERON quality applies to every coil or segment that we can make, as well as to every commutator we build. That's why so many electric railway men rely absolutely on our name.

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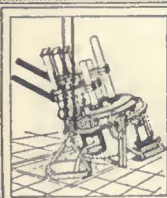
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Stands  
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Special Work.  
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Ten Standard Sizes 1/2 to 24 Tons Capacity  
Most Rapid and efficient for making  
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The Most Successful Men in the Electric Railway  
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Made in various types and sizes to meet the requirements of service on street and city system. Complete line of registers, counters and car fittings.

Exclusive selling agents for HEEREN ENAMEL BADGES.

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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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Fit the Fare and Fare Collection System

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Is the finest cord that science and skill can produce. Its wearing qualities are unsurpassed.

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If you are not familiar with the quality you will be surprised at its ENDURANCE and ECONOMY.

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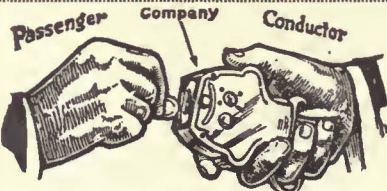
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Manufacturers of bell, signal and other cords.  
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of pressed Steel for all Classes of Passenger Service. Rattan for covering seats and for snow sweepers.

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Factory at Wakefield, Mass.

Offices at New York, Chicago, San Francisco



Direct Automatic Registration By the Passengers  
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Made of extra quality stock firmly braided and smoothly finished. Carefully inspected and guaranteed free from flaws. Samples and information gladly sent.

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For Every Class of Service

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are two of the winter problems that you must settle without delay. We can show you how to take care of both, with one equipment. Now is the time to get your cars ready for next winter. Write for details.

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E. R. J.

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**DRAFTSMEN-COMPUTERS** wanted on railway trackwork working knowledge of and facility in trigonometry essential. State in letter, age, education, experience and approximate salary. Employment Dept., Bethlehem Steel Co., Steelton, Pa.

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**CAN** you make an opening in your sales or purchasing force for a man with broad engineering and executive training with the largest steam and electric car builders? Feel that I can deliver maximum amount of common sense and business ability. Preferably Chicago district. PW-632, Electric Railway Journal, Old Colony Bldg., Chicago, Ill.

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**SUPERINTENDENT** of transportation, at present with a large successful property that has been placed on a sound basis largely through efforts of advertiser, solicits correspondence or interviews with managers of city and suburban properties that require effort and ability to get results. A wide practical experience places me in a position to build up an efficient organization that would be a credit to any property. Also recognized as an economical operator, quick to locate leaks and correct same. High grade references from present employers as to character and ability to get results regardless of size or condition of property. Personal reasons for desiring a change. PW-604, Elec. Ry. Journal, Real Estate Trust Bldg., Phila., Pa.

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80 and 90 lb.

Full complement of Angle Bars. Shipment January and February, 1924.

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**These Trolley Passenger Cars in excellent condition. Taken out of service on account of abandonment of line.**

- 3—One-man Safety Birney Cars., Built by Brill 1920. 2 G.E. 264 motors. Weight, about 16,000 lb.
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Price reasonable for cash payment. Will be glad to show these cars to anyone interested in their purchase. Apply to Pennsylvania New Jersey Railway Co., Trenton, N. J.

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Notice is hereby given that D. P. Abercrombie Receiver of Northern Massachusetts Street Railway Company pursuant to decree of the Supreme Judicial Court of Massachusetts, sitting in Suffolk County, entered November 9, 1923, in the case of William Gilmour v. Northern Mass. Street Railway Company No. 35532 Equity, will receive sealed bids for the purchase of all the property and franchises of the Northern Massachusetts Street Railway Company, at the office of the Receiver, Greenfield, Massachusetts, up to ten o'clock A. M. on December 27, 1923, at which time said bids will be opened.

The property is to be sold in parcels which are fully described in circular on file at the office of the Receiver in Greenfield. Copies of this circular may be had upon application.

D. P. ABERCROMBIE, Receiver, P. O. Box 614, Greenfield, Mass.

### RAILS

Cars, Locomotives, Tanks, Steel Piling  
Fairbanks-Morse Standard Gage Gasoline  
Motor Car; Seats 34 people

**ZELNICKER IN ST. LOUIS**

400 Tons 65 lb. rails

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## RAILWAY MOTORS

2—Unused General Electric, type 210-H,  
50% of market price.

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

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NEW ORLEANS, 521-5 Baronne Street  
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SAN FRANCISCO, Sheldon Building  
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SEATTLE, L. C. Smith Building  
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Electrical Machinery, Steam Turbines, Steam Engines,  
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"HONEYCOMB" AND "ROUND JET" VENTILATORS  
for Monitor and Arch Roof Cars, and all classes of buildings;  
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of Car Temperatures.

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Write for  
Catalogue

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- 1—500 kw. Westinghouse Rotary Converter, 870 amp., 575 v. D.C., 6 ph., 60 cy. A.C. speed 900 r.p.m., complete with 3 transformers, end play and speed limit device, and A.C. and D.C. panels.
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114-118 Liberty St., New York City. Telephone 4337-8 Rector.

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ELECTRIC EQUIPMENT CO.  
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One Double Truck Wagon, Automatic and Straight Air Brakes  
Four GE-201 Motors K-35 Control Weight 28 tons.

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26-ton Baldwin Westinghouse, all steel, fully equipped, first-class condition, double and single-truck modern light-weight steel cars.

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Equipment, Apparatus and Supplies Used by the Electric Railway Industry with  
Names of Manufacturers and Distributors Advertising in this Issue

- Advertising, Street Car  
Collier, Inc., Barron G.
- Air Receivers & Aftercoolers  
Ingersoll-Rand Co.
- Anchors, Guy  
Elec. Service Supplies Co.  
Ohio Brass Co.  
Western Electric Co.  
Westinghouse E. & M. Co.
- Armature Shop Tools  
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- Automatic Return Switch  
Stands  
Ramapo Ajax Corp.
- Automatic Safety Switch  
Stands  
Ramapo Ajax Corp.
- Axles  
Bemis Car Truck Co.  
St. Louis Car Co.
- Axles, Car Wheel  
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Brill Co., The J. G.  
Carnegie Steel Co.  
Westinghouse E. & M. Co.
- Rabbit Metal  
Ajax Metal Co.
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- Bearings and Bearing Metals  
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- Bonds, Rail  
Amer. Steel & Wire Co.  
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Ohio Brass Co.  
Railway Track-work Co.  
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Westinghouse E. & M. Co.
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(See also Poles, Ties,  
Posts, Etc.)  
Bates Expanded Steel Truss  
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Amer. Br. Shoes & Fdy. Co.  
Barbour-Stockwell Co.  
Bemis Car Truck Co.  
Brill Co., The J. G.  
St. Louis Car Co.
- Brakes, Brake Systems and  
Brake Parts  
Allis-Chalmers Mfg. Co.  
Bemis Car Truck Co.  
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General Electric Co.  
National Brake Co.  
St. Louis Car Co.  
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- Brushes, Carbon  
General Electric Co.  
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Le Carbone Co.  
Morgansite Brush Co., Inc.  
Westinghouse E. & M. Co.
- Brushes, Graphite  
Morgansite Brush Co., Inc.
- Brush Holders  
Anderson Mfg. Co., A. &  
J. M.
- Brushes, Wire, Pneumatic  
Ingersoll-Rand Co.
- Buses, Motor  
Brill Co., The J. G.  
St. Louis Car Co.
- Bushings, Case Hardened and  
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St. Louis Car Co.
- Cables. (See Wires and  
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Cambric Tapes, yellow and  
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Irvington Varnish & Ins. Co.  
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Carbon)
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McGuire-Cummings Mfg. Co.  
National Ry. Appliance Co.  
St. Louis Car Co.  
Wason Mfg. Co.
- Cars, Gns. Rail  
St. Louis Car Co.
- Cars, Second Hand  
Archer & Balwin, Inc.  
Davison Chemical Co., The  
Electric Equipment Co.  
Northern Mass. St. Ry. Co.  
Pennsylvania, N. J. Ry. Co.  
Transit Equipment Co.
- Cars, Self-Propelled  
General Electric Co.  
Car Signal System  
Fahnestock Elect. Co.
- Castings, Brass, Composition  
or Copper  
Ajax Metal Co.  
Anderson Mfg. Co., A. &  
J. M.
- Castings, Gray Iron and Steel  
Bemis Car Truck Co.  
St. Louis Car Co.
- Castings, Malleable and Brass  
Amer. Br. Shoes & Fdy. Co.  
Bemis Car Truck Co.  
St. Louis Car Co.
- Catchers and Retrievers,  
Trolley  
Elec. Service Supplies Co.  
Ohio Brass Co.  
Wood Co., Chas. N.
- Catenary Construction  
Archbold-Brady Co.  
Western Electric Co.
- Ceilings, Plywood, Panels  
Haskelite Mfg. Co.
- Change Carriers  
Cleveland Fare Box Co.
- Circuit-Breakers  
General Electric Co.  
Westinghouse E. & M. Co.
- Clamps and Connectors for  
Wires and Cables  
Anderson Mfg. Co., A. &  
J. M.  
Dossert & Co.  
Elec. Ry. Equipment Co.  
Elec. Ry. Improvement Co.  
Elec. Service Supplies Co.  
General Electric Co.  
Hubbard & Co.  
Ohio Brass Co.  
Westinghouse E. & M. Co.
- Cleaners and Scrapers Track  
(See also Snow-Plows,  
Sweepers and Brooms)  
Brill Co., The J. G.  
St. Louis Car Co.
- Clusters and Sockets  
General Electric Co.
- Coal and Ash Handling (See  
Conveying and Hoisting  
Machinery)
- Coil Banding and Winding  
Machines  
Elec. Service Supplies Co.
- Coils Armature and Field  
General Electric Co.  
Westinghouse E. & M. Co.  
Coils, Choke and Kicking  
Elec. Service Supplies Co.  
General Electric Co.  
Westinghouse E. & M. Co.
- Coin Counting Machines  
Cleveland Fare Box Co.  
Intern'l Register Co.
- Coin Sorting Machines  
Cleveland Fare Box Co.
- Coin Wrappers  
Cleveland Fare Box Co.  
Commutator Slotters  
Elec. Service Supplies Co.  
General Electric Co.  
Westinghouse E. & M. Co.
- Commutator Truing Devices  
General Electric Co.  
Commutators or Parts  
Cameron Elec'l Mfg. Co.  
General Electric Co.  
Westinghouse E. & M. Co.
- Compressors, Air  
Allis-Chalmers Mfg. Co.  
General Electric Co.  
Ingersoll-Rand Co.  
Western Electric Co.  
Westinghouse Tr. Br. Co.
- Compressors, Air Portable  
Ingersoll-Rand Co.
- Condensers  
Allis-Chalmers Mfg. Co.  
General Electric Co.  
Ingersoll-Rand Co.  
Westinghouse E. & M. Co.
- Condenser Papers  
Irvington Varnish & Ins. Co.
- Connectors, Solderless  
Dossert & Co.  
Westinghouse E. & M. Co.
- Connectors, Trailer Car  
Consolidated Car Heat'g Co.  
Elec. Service Supplies Co.  
Ohio Brass Co.
- Controllers or Parts  
Allis-Chalmers Mfg. Co.  
General Electric Co.  
Westinghouse E. & M. Co.
- Controller Regulators  
Elec. Service Supplies Co.
- Controlling Systems  
General Electric Co.  
Westinghouse E. & M. Co.
- Converters, Rotary  
Allis-Chalmers Mfg. Co.  
General Electric Co.  
Westinghouse E. & M. Co.
- Copper Wire  
Anaconda Copper Mining Co.
- Cord, Kell, Trolley, Register  
Brill Co., The J. G.  
Elec. Service Supplies Co.  
Internat'l Register Co., The  
Roebling's Sons Co., John A.  
St. Louis Car Co.  
Samson Cordage Works  
Silver Lake Co.
- Cord Connectors and Couplers  
Elec. Service Supplies Co.  
Samson Cordage Works  
Wood Co., Chas. N.
- Couplers, Car  
Brill Co., The J. G.  
Ohio Brass Co.  
St. Louis Car Co.  
Westinghouse Tr. Br. Co.
- Cranes  
Allis-Chalmers Mfg. Co.  
Universal Crane Co.
- Cranes, Locomotive  
Universal Crane Co.
- Cranes, Motor Truck  
Universal Crane Co.
- Cranes, Portable  
Universal Crane Co.
- Cranes, Gasoline or Electric  
Universal Crane Co.
- Cross Arms (See Brackets)
- Crossing Foundations  
International Steel Tis Co.
- Crossing, Frog & Switch  
Ramapo Ajax Corp.  
Wharton, Jr., & Co., Wm.
- Crossing, Manganese  
Ramapo Ajax Corp.
- Crossings  
Ramapo Ajax Corp.
- Crossings, Track (See Track,  
Special Work)
- Crossings, Trolley  
Ohio Brass Co.
- Curtains and Curtain Fixtures  
Brill Co., The J. G.  
Elec. Service Supplies Co.  
Morton Mfg. Co.  
St. Louis Car Co.
- Dealer's Machinery  
Elec. Equipment Co.  
Toledo & Indiana R.R. Co.  
Transit Equip. Co.  
Zelnicke Supply Co.,  
Walter A.
- Derailing Devices (See also  
Track Work)
- Derailing Switches  
Ramapo Ajax Corp.
- Destination Signs  
Elec. Service Supplies Co.
- Detective Service  
Wish-Service, P. Edward
- Door Operating Devices  
Brill Co., The J. G.  
General Electric Co.  
Hale & Kilburn Co.  
St. Louis Car Co.
- Doors & Door Fixtures  
Brill Co., The J. G.  
Consolidated Car Heat'g Co.  
General Electric Co.  
Nat'l Pneumatic Co., Inc.
- Doors, Folding Vestibule  
Nat'l Pneumatic Co., Inc.  
Safety Car Devices Co.
- Drills, Rock  
Ingersoll-Rand Co.
- Drills, Track  
Amer. Steel & Wire Co.  
Elec. Service Supplies Co.  
Ingersoll-Rand Co.  
Ohio Brass Co.
- Dryers, Sand  
Elec. Service Supplies Co.
- Ears  
Ohio Brass Co.
- Electrical Wires and Cables  
Amer. Electrical Works  
Amer. Steel & Wire Co.  
Roebling's Sons & Co., J. A.  
Western Electric Co.
- Electric Grinders  
Railway Track-work Co.
- Electrodes, Carbon  
Railway Track-work Co.
- Electrodes, Steel  
Railway Track-work Co.
- Engineers, Consulting, Con-  
tracting and Operating  
Allison & Co., J. S.  
Archbold-Brady Co.  
Arnold Co., The  
Beeler, John A.  
Bibbins, J. Rowland  
Buchanan & Lay Corp.  
Day & Zimmerman, Inc.  
Drum & Co., A. L.  
Ford, Bacon & Davis  
Hemphill & Wells  
Holst, Engelhardt W.  
Jackson, Walter  
Kelly Cooke & Co.  
Ong, Joe R.  
Parsons, Klapp, Brinkerhoff  
& Douglas  
Richey, Albert S.  
Sanderson & Porter  
Sangster & Co., A.  
Stevens & Wood  
Stone & Webster  
White Eng. Corp., The J. G.  
Wortham, Edwin
- Engines, Gas, Oil or Steam  
Allis-Chalmers Mfg. Co.  
Ingersoll-Rand Co.  
Westinghouse E. & M. Co.
- Fare Boxes  
Cleveland Fare Box Co.  
Nat'l Ry. Appliance Co.
- Fare Registers  
Ohmer Fare Register Co.
- Fences, Woven Wire and  
Fence Posts  
Amer. Steel & Wire Co.
- Fenders and Wheel Guards  
Brill Co., The J. G.  
Consolidated Car Fender Co.  
Elec. Service Supplies Co.  
St. Louis Car Co.
- Fibre and Fibre Tubing  
Westinghouse E. & M. Co.
- Field Coils (See Coils)
- Fire Extinguishers  
Foamite-Childs Corp.
- Fire Fighting Apparatus  
Foamite-Childs Corp.
- Flange-way Guards, Steel  
Godwin Co., Inc., W. S.
- Forgings  
Carnegie Steel Co.
- Frogs & Crossings, Tee Rail  
Ramapo Ajax Corp.
- Frogs, Track (See Track  
Work)
- Frogs, Trolley  
Ohio Brass Co.
- Furnaces, Elec  
Pittsburgh Elec. Furnace  
Corp.
- Fuses and Fuse Boxes  
Consolidated Car Heat'g Co.  
General Electric Co.  
Western Electric Co.  
Westinghouse E. & M. Co.
- Fuses, Refillable  
General Electric Co.
- Gaskets  
Power Specialty Co.  
Westinghouse Tr. Br. Co.
- Gas-Electric Cars  
General Elec. Co.  
Westinghouse E. & M. Co.
- Gates, Car  
Brill Co., The J. G.  
St. Louis Car Co.
- Gear Blanks  
Carnegie Steel Co.
- Gear Cases  
Chillingworth Mfg. Co.  
Elec. Service Supplies Co.  
Westinghouse E. & M. Co.
- Gears and Pinions  
Bemis Car Truck Co.  
Bethlehem Steel Co.  
Elec. Service Supplies Co.  
General Electric Co.  
Nat'l Ry. Appliance Co.  
Nuttall Co., R. D.  
Tool Steel Gear & Pinion  
Co.
- Generating Sets, Gas-Electric  
General Electric Co.
- Generators  
Allis-Chalmers Mfg. Co.  
General Electric Co.  
Western Electric Co.  
Westinghouse E. & M. Co.
- Gilder Rails  
Lorain Steel Co.
- Gong (See Bells and Gongs)
- Greases (See Lubricants)
- Grinders and Grind. Supplies  
Railway Track-work Co.
- Grinders, Portable  
Railway Track-work Co.
- Grinders, Portable Electric  
Railway Track-work Co.
- Grinding Bricks and Wheels  
Railway Track-work Co.
- Guard Rail Clamps  
Ramapo Ajax Corp.
- Guard Rails, Tee Ball &  
Manganese  
Ramapo Ajax Corp.
- Guards, Trolley  
Elec. Service Supplies Co.  
Ohio Brass Co.
- Hammers, Pneumatic  
Ingersoll-Rand Co.
- Harps, Trolley  
Anderson Mfg. Co., A. & J. M.  
Elec. Service Supplies Co.  
Nuttall Co., R. D.  
Star Brass Works  
Thornton Trolley Wheel Co.
- Headlights  
Elec. Service Supplies Co.  
General Electric Co.  
Ohio Brass Co.  
St. Louis Car Co.
- Headlining  
Haskelite Mfg. Co.
- Heaters, Car (Electric)  
Consolidated Car Heat'g Co.  
Gold Car Heat. & Lig. Co.  
Nat'l Ry. Appliance Co., P.  
Smith Heater Co., Peter
- Helmets—Welding  
Railway Track-work Co.
- Heaters, Car, Hot Air and  
Water  
Elec. Service Supplies Co.  
Smith Heater Co., Peter
- Hoists and Lifts  
Ford Chain Clock Co.
- Hoists, Portable  
Ingersoll-Rand Co.
- Hydraulic Machinery  
Allis-Chalmers Mfg. Co.
- Indicating Signals  
Oskel Equipment Co.
- Instruments Measuring, Test-  
ing and Recording  
Elec. Service Supplies Co.  
General Electric Co.  
Western Electric Co.  
Westinghouse E. & M. Co.
- Insulating Cloth, Paper and  
Tape  
Anchor Webbing Co.  
General Electric Co.  
Irvington Varnish & Ins. Co.  
Okonits Co.  
Stand. Underground Cable  
Co.  
Westinghouse E. & M. Co.
- Insulating Silk  
Irvington Varnish & Ins. Co.
- Insulating Varnishes  
Irvington Varnish & Ins. Co.
- Insulation (See also Paints)  
Electric Ry. Equipment Co.  
Elec. Service Supplies Co.  
General Electric Co.  
Irvington Varnish & Ins. Co.  
Okonits Co.  
Westinghouse E. & M. Co.
- Insulators (See also Line  
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Elec. Service Supplies Co.  
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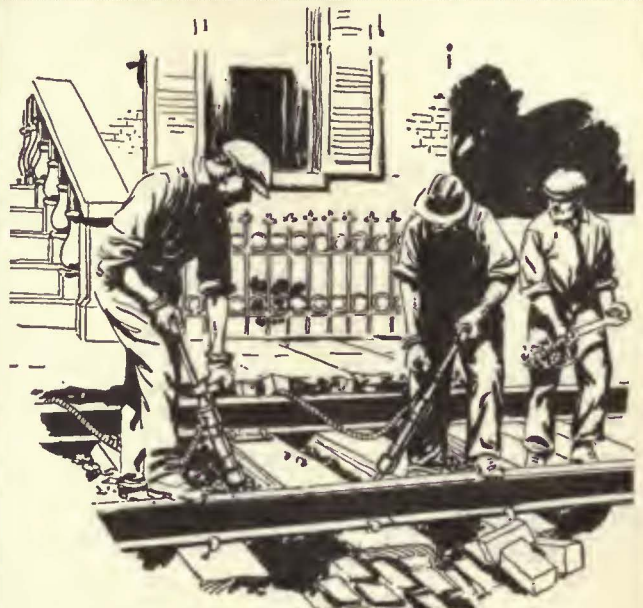
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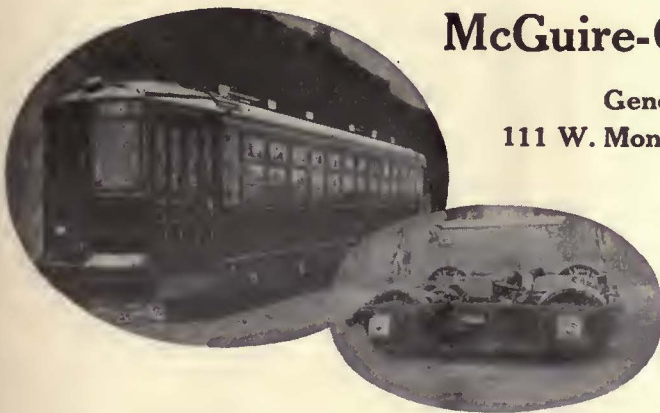
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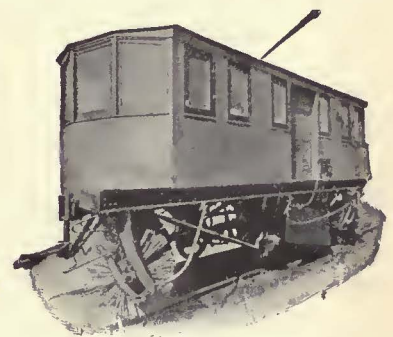
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Trolley Wheels**



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**We make a specialty of**

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**We solicit a test of TULC  
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**The Universal Lubricating Co.**

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- Insulators, High Voltage**  
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Bruckey Jack Co.  
Buda Co.  
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(See Rail Joints)
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Bemis Car Truck Co.  
Brill Co., J. G.  
St. Louis Car Co.
- Junction Boxes**  
Std. Underground Cable Co.
- Lamps, Guards and Fixtures**  
Elec. Service Supplies Co.  
General Electric Co.  
Westinghouse E. & M. Co.
- Lamps, Arc & Incandescent**  
(See also Headlights)  
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Westinghouse E. & M. Co.
- Lamps, Signal and Marker**  
Nichols-Lintern Co.  
Ohio Brass Co.
- Lanterns, Classification**  
Nichols-Lintern Co.
- Lightning Protection**  
Elec. Service Sup. Co.  
General Electric Co.  
Ohio Brass Co.  
Shaw, Henry M.  
Westinghouse E. & M. Co.
- Line Material** (See also Brackets, Insulators, Wires, etc.)  
Anderson Mfg. Co., A.&J.M.  
Archbold-Brady Co.  
Dossert & Co.  
Electric Ry. Equipment Co.  
Elec. Service Sup. Co.  
General Electric Co.  
Hubbard & Co.  
Ohio Brass Co.  
Western Electric Co.  
Westinghouse E. & M. Co.
- Locking Spring Boxes**  
Wharton Jr., & Co., Wm.
- Locomotives, Electric**  
General Electric Co.  
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Universal Lubricating Co.
- Lubricants, Oil and Grease**  
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Univoreal Lubricating Co.
- Manganese Steel Castings**  
Wharton, Jr., & Co., Wm.
- Manganese Steel Guard Rails**  
Ramapo Ajax Corp.
- Manganese Steel Switches**  
Frogs & Crossings  
Ramapo Ajax Corp.
- Manganese Steel Special Track Work**  
Wharton, Jr., & Co., Wm.
- Meters** (See Instruments)
- Molding, Metal**  
Allis-Chalmers Mfg. Co.
- Motor Bases** (See Bases, Motor)
- Motor Leads**  
Dossert & Co.
- Motors, Electric**  
Allis-Chalmers Mfg. Co.  
Westinghouse E. & M. Co.
- Motors and Generators, Sets**  
General Electric Co.
- Motormen's Seats**  
Allis-Chalmers Mfg. Co.  
Brill Co., J. G.  
Elec. Service Sup. Co.  
Heywood-Wakefield Co.  
St. Louis Car Co.  
Wood Co., Chas. N.
- Nuts and Bolts**  
Allis-Chalmers Mfg. Co.  
Barbour-Stockwell Co.  
Bemis Car Truck Co.  
Hubbard & Co.
- Oils** (See Lubricants),  
**Omnibuses** (See Buses, Motor)
- Oxy-Acetylene** (See Cutting Apparatus, Oxy-Acetylene)
- Packing**  
Elec. Service Supplies Co.  
Power Specialty Co.  
Westinghouse E. & M. Co.
- Paints and Varnishes** (Insulating)  
Irvington Varnish & Ins. Co.
- Paints and Varnishes for Woodwork**  
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National Ry. Appliance Co.
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Ingersoll-Rand Co.
- Paving Guards, Steel**  
Godwin Co., Inc., W. S.
- Paving Material**  
Amer. Br. Shoe & Fdy. Co.
- Pileups, Trolley Wire**  
Elec. Service Supplies Co.  
Ohio Brass Co.
- Pinion Puffers**  
Elec. Service Supplies Co.  
General Electric Co.  
Wood Co., Chas. N.
- Pinions** (See Gears)
- Pins, Case Hardened, Wood and Iron**  
Bemis Car Truck Co.  
Elec. Service Sup. Co.  
Ohio Brass Co.  
Westinghouse Tr. Braks Co.
- Pipe Fittings**  
Power Specialty Co.  
Westinghouse Tr. Brake Co.  
Planers (See Machine Tools)
- Plates for Tee Rail Switches**  
Ramapo Ajax Corp.
- Pliers, Rubber Insulated**  
Elec. Service Sup. Co.
- Pneumatic Tools**  
Ingersoll-Rand Co.
- Pole Line Hardware**  
Ohio Brass Co.
- Poles, Metal Street**  
Bates Expanded Steel Truss Co.  
Elec. Ry. Equipment Co.  
Hubbard & Co.  
Western Electric Co.
- Pole Reinforcing**  
Hubbard & Co.
- Poles & Ties Treated**  
Bell Lumber Co.  
Baker Wood Preserving Co.  
International Creosoting & Construction Co.
- Poles, Ties, Posts, Piling & Lumber**  
Baker Wood Preserving Co.  
Bell Lumber Co.  
International Creosoting & Construction Co.
- Poles, Trolley**  
Bell Lumber Co.  
Elec. Service Supplies Co.  
Nuttall Co., R. D.
- Poles, Tubular Steel**  
Elec. Ry. Equipment Co.  
Elec. Service Sup. Co.
- Porcelain Special High Voltage**  
Lapp Insulator Co., Inc.
- Pothead**  
Okonite Co.
- Power Saving Devices**  
National Ry. Appliance Co.
- Pressure Regulators**  
General Electric Co.  
Ohio Brass Co.  
Westinghouse E. & M. Co.
- Pumps**  
Allis-Chalmers Mfg. Co.  
Ingersoll-Rand Co.
- Pumps, Vacuum**  
Ingersoll-Rand Co.
- Punches, Ticket**  
Bonney-Vehelage Tool Co.  
Intern'l Register Co., The  
Wood Co., Chas. N.
- Rail Braces & Fastenings**  
Ramapo Ajax Corp.
- Rail Grinders** (See Grinders)
- Rail Joints**  
Carnegie Steel Co.  
Rail Joint Co.
- Rail Joints—Welded**  
Lorain Steel Co.
- Rails, Steel**  
Carnegie Steel Co.
- Railway Pavlog Guards, Steel**  
Godwin Co., Inc., W. S.
- Railway Safety Switches**  
Consolidated Car Heat. Co.  
Westinghouse E. & M. Co.
- Rail Welding**  
Rail Welding & Bonding Co.  
Railway Track-work Co.  
Rattan  
Brill Co., The J. G.  
Elec. Service Supplies Co.  
Hale-Kilburn Co.  
Heywood-Wakefield Co.  
McGuire-Cummings Mfg. Co.  
St. Louis Car Co.
- Registers and Fittings**  
Brill Co., The J. G.  
Elec. Service Supplies Co.  
Intern'l Register Co., The  
Ohmer Fare Register Co.  
Rooke Automatic Rg. Co.  
St. Louis Car Co.
- Reinforcement, Concrete**  
Amer. Steel & Wire Co.  
Carnegie Steel Co.
- Repair Shop Appliances** (See also Cnl Banding and Winding Machines)  
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Repair Work (See also Collis)  
General Electric Co.  
Westinghouse E. & M. Co.
- Replacers, Car**  
Elec. Service Sup. Co.
- Resistances**  
Consolidated Car Heat. Co.  
Resistance, Wire and Tube  
General Electric Co.  
Westinghouse E. & M. Co.
- Retrievers, Trolley** (See Catchers and Retrievers, Trolley)
- Rheostats**  
General Electric Co.  
Westinghouse E. & M. Co.
- Roofs**  
Haskelite Mfg. Co.
- Sanders, Track**  
Brill Co., The J. G.  
Elec. Service Sup. Co.  
Nichols-Lintern Co.  
Ohio Brass Co.  
St. Louis Car Co.
- Sash Fixtures, Car**  
Brill Co., The J. G.  
St. Louis Car Co.
- Sash, Metal, Car Window**  
Hale-Kilburn Co.
- Scrapers, Track** (See Cleaners and Scrapers, Track)
- Screw Drivers, Rubber Insulated**  
Elec. Service Sup. Co.
- Sets, Bus**  
Hale-Kilburn Co.  
Heywood-Wakefield Co.  
St. Louis Car Co.
- Sets, Car** (See also Rattan)  
Brill Co., The J. G.  
Hale-Kilburn Co.  
Heywood-Wakefield Co.  
St. Louis Car Co.
- Seating Materials**  
Brill Co., J. G.  
Heywood-Wakefield Co.  
St. Louis Car Co.
- Second Hand Equipment**  
Abel, G. T.  
Abercrombie, D. P.  
Davison Chemical Co., The  
Electric Equipment Co.  
Pennsylvania, N. J. Ry. Co.  
Sachsenmaier Co., George  
Zelnicke Supply Co.,  
Walter A.
- Shades, Vestibole**  
Brill Co., The J. G.
- Shovels**  
Allis-Chalmers Mfg. Co.  
Brill Co., The J. G.  
Hubbard & Co.
- Side Bearings** (See Bearings, Center and Side)
- Signals, Car Starting**  
Consolidated Car Heat. Co.  
Elec. Service Sup. Co.  
Nat'l Pneumatic Co., Inc.
- Signals, Indicating**  
Nichols-Lintern Co.  
Oskel Equipment Co.
- Signal Systems, Highway Crossing**  
Elec. Service Sup. Co.  
Nachod Signal Co., Inc.  
U. S. Elec. Signal Co.  
Wood Co., Chas. N.
- Signal Systems, Block**  
Nachod Signal Co., Inc.  
U. S. Elec. Signal Co.
- Slack Adjusters** (See Brake Adjusters)
- Slag**  
Carnegie Steel Co.
- Sleet Wheels and Cutters**  
Anderson Mfg. Co., A.&J.M.  
Elec. Ry. Improvement Co.  
Elec. Service Supplies Co.  
Nuttall Co., R. D.
- Smokestacks, Car**  
Nichols-Lintern Co.
- Snow Sweepers, Rattan**  
Heywood-Wakefield Co.
- Snow-Plows, Sweepers and Brooms**  
Brill Co., The J. G.  
Consolidated Car Fender Co.  
McGuire-Cummings Mfg. Co.  
St. Louis Car Co.
- Soldering and Brazing Apparatus** (See Welding Processes and Apparatus)  
Irvington Varnish & Ins. Co.
- Special Trackwork**  
Lorain Steel Co.
- Spikes**  
Amer. Steel & Wire Co.  
Splicing Compounds  
Westinghouse E. & M. Co.  
Splicing Sleeves (See Clamps and Connectors)
- Springs, Car and Truck**  
Amer. Steel & Wire Co.  
Bemis Car Truck Co.  
Brill Co., The J. G.  
St. Louis Car Co.
- Sprinklers, Track and Road**  
Brill Co., The J. G.  
McGuire-Cummings Mfg. Co.  
St. Louis Car Co.
- Steel Castings**  
Wharton, Jr., & Co., Wm.  
Steel and Steel Products  
Morton Mfg. Co.
- Steps, Car**  
Morton Mfg. Co.
- Stokers, Mechanical**  
Babcock & Wilcox Co.  
Westinghouse E. & M. Co.
- Stop Signals**  
Oskel Equipment Co.
- Storage Batteries** (See Batteries, Storage)
- Strain, Insulators**  
Ohio Brass Co.
- Strand**  
Roebbling's Sons Co., J. A.
- Superheaters**  
Babcock & Wilcox Co.
- Sweepers, Snow** (See Snow Plows, Sweepers and Brooms)
- Switches, Selector**  
Nichols-Lintern Co.
- Switches, Tee Rail**  
Ramapo Ajax Corp.
- Switches, Track** (See Track Special Work)
- Switches and Switchboards**  
Anderson Mfg. Co., A.&J.M.  
Allis-Chalmers Mfg. Co.  
Elec. Service Supplies Co.  
General Electric Co.  
Westinghouse E. & M. Co.
- Tamper Tie**  
Ingersoll-Rand Co.  
Railway Track-work 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.  
Western Electric Co.
- Terminals, Cable**  
Std. Underground Cable Co.
- Testing Instruments** (See Instruments, Electrical Measuring, Testing, etc.)
- Thermostats**  
Consolidated Car Heat. Co.  
Cold Car Heat. & Ltg. Co.  
Railway Utility Co.  
Smith Heater Co., Peter
- Ticket Choppers & Destroyers**  
Elec. Service Supplies Co.
- Ties, All-Metal**  
Metal Safety R. R. Tie Co.
- Ties, Mechanical**  
Dayton Steel Tie Co.
- Ties and Tie Rods, Steel**  
Barbour-Stockwell Co.  
Carnegie Steel Co.  
International Steel Tie Co.
- Ties, Wood Cross** (See Poles, Ties, Posts, etc.)
- Tickets & Transfers**  
Globe Ticket Co.  
Tongue Switches  
Wharton, Jr., & Co., Wm.
- Tool Steel**  
Carnegie Steel Co.
- Tools, Track & Miscellaneous**  
Amer. Steel & Wire Co.  
Elec. Service Supplies Co.  
Hubbard & Co.  
Railway Track-work Co.
- Torches, Acetylene** (See Cutting Apparatus)
- Tower Wagons and Auto Trucks**  
McCardell & Co., J. R.
- Towers and Transmission Structures**  
Archbold-Brady Co.  
Bates Expanded Steel Truss Co.  
Westinghouse E. & M. Co.
- Track Expansion Joints**  
Wharton, Jr., & Co., Inc., Wm.
- Track Grinders**  
Railway Track-work Co.
- Trackless Trolley Cars**  
St. Louis Car Co.
- Track, Special Work**  
Barbour-Stockwell Co.  
New York Switch and Crossing Co.  
Ramapo Ajax Corp.  
Wharton, Jr., & Co., Inc., Wm.
- Transfer** (See Tickets)
- Transfer Issuing Machines**  
Ohmer Fare Register Co.  
Transfer Tables  
American Bridge Co.  
Transferers  
Allis-Chalmers Mfg. Co.  
General Electric Co.  
Western Electric Co.  
Westinghouse E. & M. Co.
- Treads, Safety, Stair, Car Step**  
Morton Mfg. Co.
- Trolley Bases**  
Elec. Service Supplies Co.  
General Electric Co.  
Nuttall Co., R. D.  
Ohio Brass Co.
- Trolley Bases, Retrieving**  
Elec. Service Supplies Co.  
Nuttall Co., R. D.  
Ohio Brass Co.
- Trolley Buses**  
Brill Co., The J. G.  
General Electric Co.  
Westinghouse E. & M. Co.
- Trolley Material, Overhead**  
Ohio Brass Co.  
Elec. Service Supplies Co.
- Trolley, Shoe**  
Miller Trolley Shoe Co.
- Trolleys and Trolley Systems**  
Ford Chalm Block Co.
- Trolley Wheels and Harps**  
Thornton Trolley Wheel Co.
- Trolley Wheels** (See Wheels, Trolley)
- Trolley Wire**  
Amer. Electrical Works  
Amer. Steel & Wire Co.  
Anaconda Copper Min. Co.  
Roebbling's Sons Co., J. A.  
Western Electric Co.
- Tucks, Car**  
Baldwin Locomotive Works  
Bemis Car Truck Co.  
Brill Co., The J. G.  
McGuire-Cummings Mfg. Co.  
St. Louis Car Co.
- Tubing, Yellow & Black**  
Flexible Varnish  
Irvington Varnish & Ins. Co.
- Turbines, Steam**  
Allis-Chalmers Mfg. Co.  
General Electric Co.  
Westinghouse E. & M. Co.
- Turbines, Water**  
Allis-Chalmers Mfg. Co.
- Turnstiles**  
Elec. Service Supplies Co.
- Valves**  
Ohio Brass Co.  
Westinghouse Tr. Br. Co.
- Varnished Papers**  
Irvington Varnish & Ins. Co.
- Varnished Silk**  
Irvington Varnish & Ins. Co.
- Ventilators, Car**  
Brill Co., The J. G.  
Nat'l Ry. Appliance Co.  
Nichols-Lintern Co.  
Railway Utility Co.  
St. Louis Car Co.
- Welded Rail Joints**  
Ohio Brass Co.  
Railway Track-work Co.
- Welders, Portable Electric**  
Ohio Brass Co.  
Railway Track-work Co.
- Welding Processes and Apparatus**  
General Electric Co.  
International Oxygen Co.  
Ohio Brass Co.  
Railway Track-work Co.  
Westinghouse E. & M. Co.
- Welding Steel**  
Railway Track-work Co.
- Wheel Guards** (See Fenders and Wheel Guards)
- Wheel Presses** (See Machine Tools)
- Wheels, Car, Cast Iron**  
Bemis Car Truck Co.  
Carnegie Steel Co.
- Wheels, Car Steel & Steel Tire**  
Carnegie Steel Co.
- Wheels, Trolley**  
Elec. Ry. Equipment Co.  
Elec. Service Supplies Co.  
General Electric Co.  
Nuttall Co., R. D.
- Whistles, Air**  
General Electric Co.  
Ohio Brass Co.  
Westinghouse E. & M. Co.
- Wire Rope**  
Roebbling's Sons Co., J. A.
- Wires and Cables**  
Amer. Electrical Works  
Amer. Steel & Wire Co.  
Anaconda Copper Min. Co.  
General Electric Co.  
Kerite Insulated Wire & Cable Co.  
Okonite Co.  
Paga Steel & Wire Co.  
Roebbling's Sons Co., J. A.  
Std. Underground Cable Co.  
Western Electric Co.  
Westinghouse E. & M. Co.
- Wood Preservatives**  
Baker Wood Preservative Co.
- Woodworking Machines**  
Allis-Chalmers Mfg. Co.



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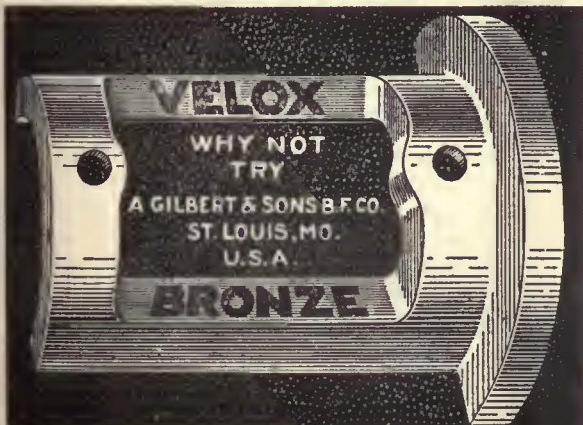
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This type of light-weight interurban car for single-end operation built by the G. C. Kuhlman Car Company has been adopted by the Northwestern Ohio Ry. & Pwr. Company, operating between Toledo and Bay Point, Ohio, a 55-mile run.

Fully equipped ready for operation, this type car weighs but 34,500 lb. while the type car displaced weighed 66,000 lb., assuring an appreciable saving to the company in operating costs. These cars are mounted on Brill 77-E-1 trucks with 26-in. diameter wheels constructed with special swing links for higher speed service. Thirty-five horsepower motors are included in the equipment and the schedule speed under which the cars are operated is 21.6 miles per hour.

The car body is 47 ft. 4 in. long over bumpers, 8 ft. 6 in. wide over posts and has seating accommodations for 56 passengers. It is so partitioned that the front part of the car is the main passenger compartment, giving a most pleasant and unobstructed view to the front and sides. The rear part of the car is set aside as a smoking compartment while the rear platform is used for baggage.

At terminal points passengers enter by way of the rear platform and unload at the front, while at other points on the line passengers both enter and leave by way of the front platform.

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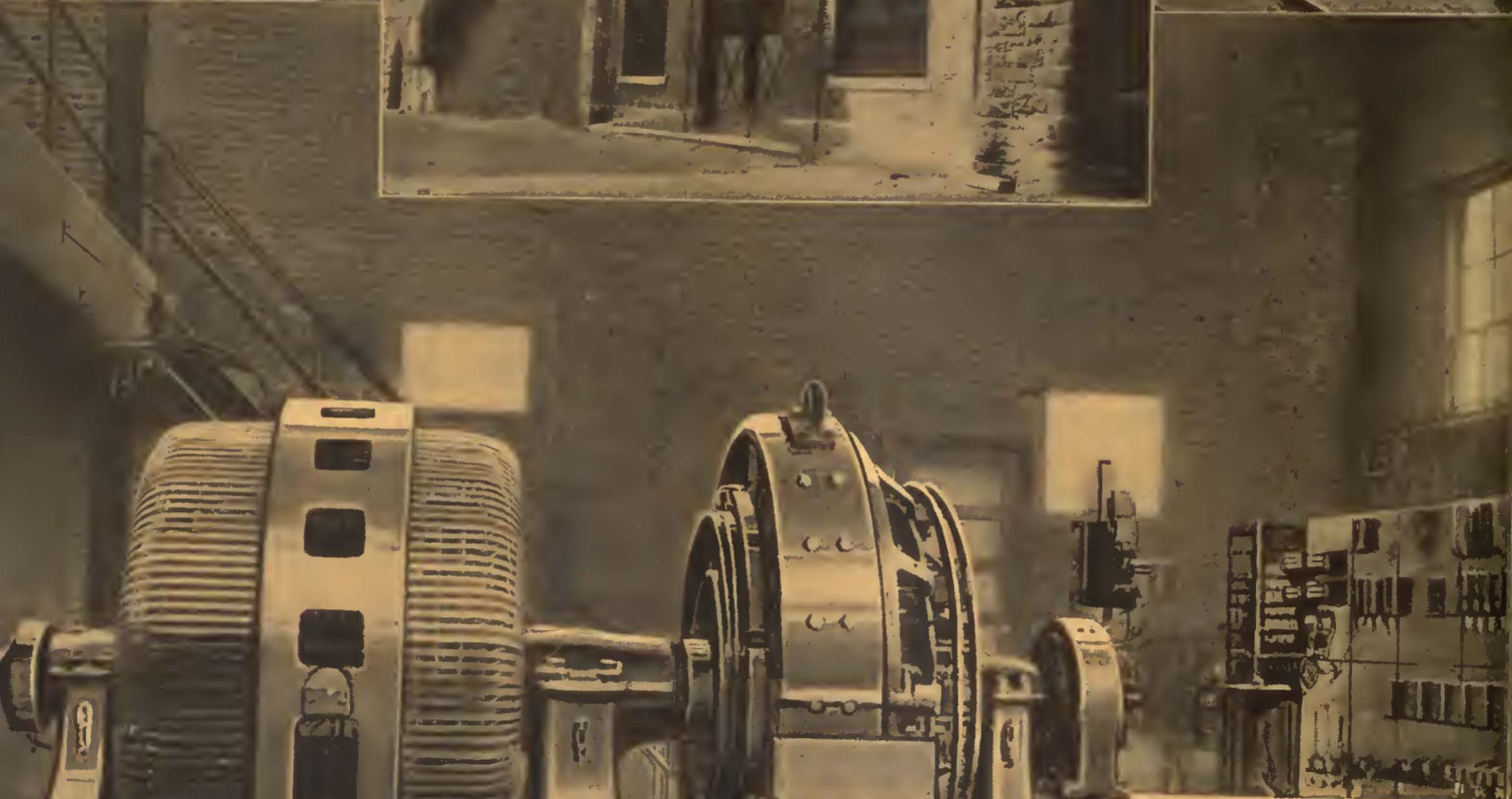
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